

STATE DO. HEAT

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

November 30, 1965

Mrs. H. C. Booth
215 North Johnson Avenue
Bloomington, Indiana

Dear Mrs. Booth:

Re: Percolation test for proposed
absorption field construction to
serve Booth Mobile Home Park
Bloomington, Monroe County

On Thursday, November 11, 1965, a representative from this office performed a percolation test on the portion of the Valhalla Cemetery set aside for a proposed extension of the sewage disposal system of Valhalla Mobile Home Park. These tests were made in accordance with our policy to check results which are included as a part of plans submitted to us for approval.

The results of the test run on November 11, 1965, show definitely that the type of system proposed is not feasible and cannot be approved. Only one of the four holes averaged as much as one inch per hour. One hole averaged $\frac{1}{2}$ inch per hour and the other two averaged $\frac{1}{4}$ inch per hour. A close inspection of the soil in this area discloses a mottled red and grey color which indicates imperfect or incomplete drainage.

On the basis of this test we strongly urge that you investigate the possibility of connecting to the Bloomington sewer system. A sewer system for Johnson Addition has been discussed and perhaps with your assistance this could become a reality.

If you have any questions concerning the above matter, please feel free to call on us.

Very truly yours,

DHP/mmg
cc: Monroe County Health Department
Frita Ryan, County Plan Co-ordinator
Ray Graham, County Surveyor
John Stapleton, Engineer

Chester H. Canham
Sanitary Engineer
Central Area

CANNELTON SEWER PIPE DIVISION



AREA CODE (812)
547-3461
CANNELTON,
INDIANA

- ★ SEWER PIPE ★ FLUE LINING ★ WALL COPING ★ PLASTIC SEWER AND PRESSURE PIPE
★ SEWAGE LIFT STATIONS ★ CAN-O-LOK PLASTIC JOINTS ★ SEWAGE TREATMENT PLANTS

$$\begin{array}{r}
 21 \\
 150 \\
 \hline
 1050 \\
 21 \\
 \hline
 3150 \text{ gals} \\
 75
 \end{array}$$

Booth 4

$$\begin{array}{r}
 5755 \\
 22050 \\
 \hline
 2362.55 \text{ sf of Field}
 \end{array}$$

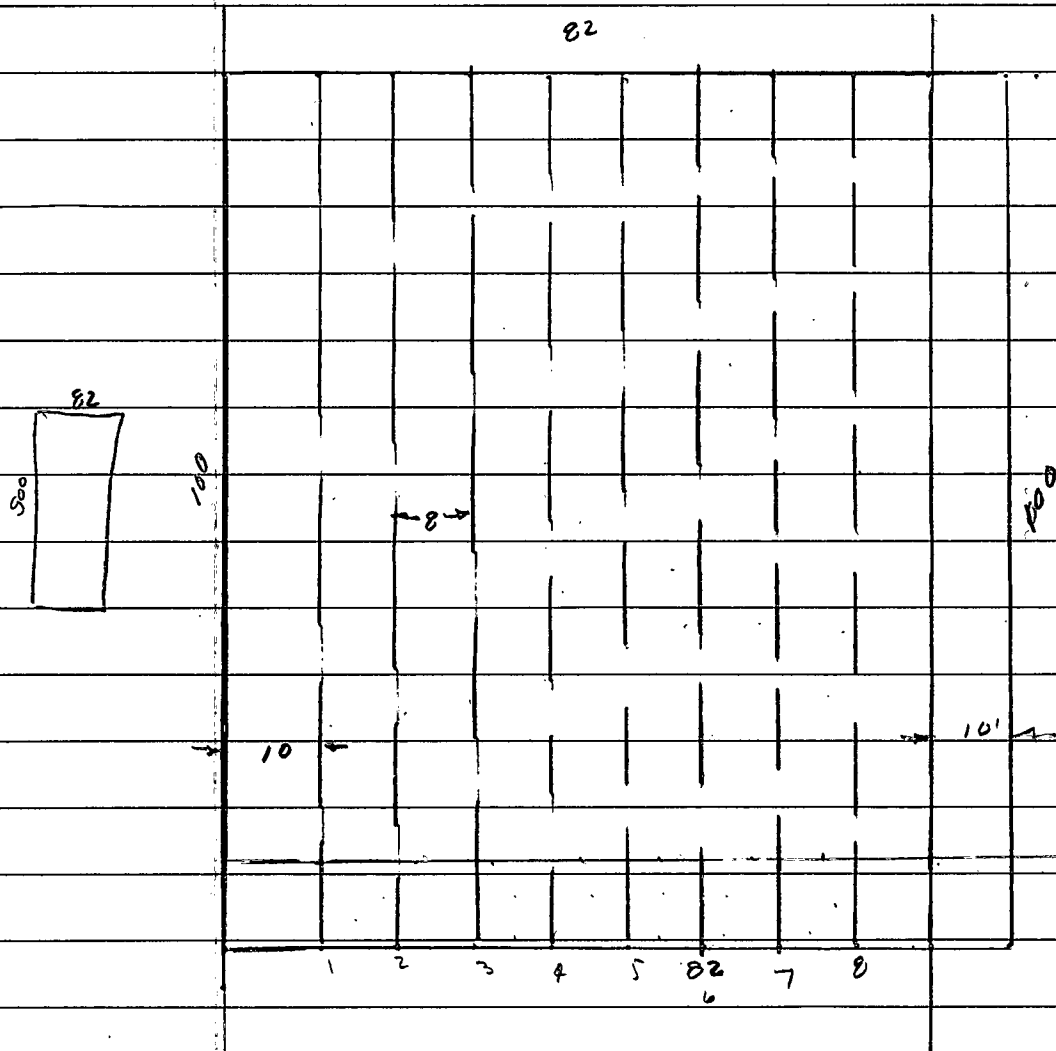
$$\begin{array}{r}
 791 \text{ Fr. Pipe} \\
 3 \overline{) 2362} \\
 \underline{21} \\
 36
 \end{array}$$

3' width
8 Apart

8 Lines 100' Long

VICTOR G. WAGNER
5622 Meadowood Drive
Speedway, Indiana
Tel.: AX 1-2552

JOHNSON AVE - TRAILER PARK



Booth

36
20
16

PERCOLATION TEST = 4" PER HOUR.

21 TRAILERS @ 150 GAL-PER TRAILER PER DAY.

$150 \times 21 = 3150$ GAL, TOTAL PER DAY.

75 \square FT. PER GALLON. (CHART)

$3150 \text{ GAL.} \times 75 \square = 2,362 \text{ SF. OF FIELD}$

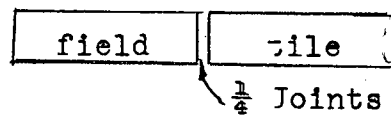
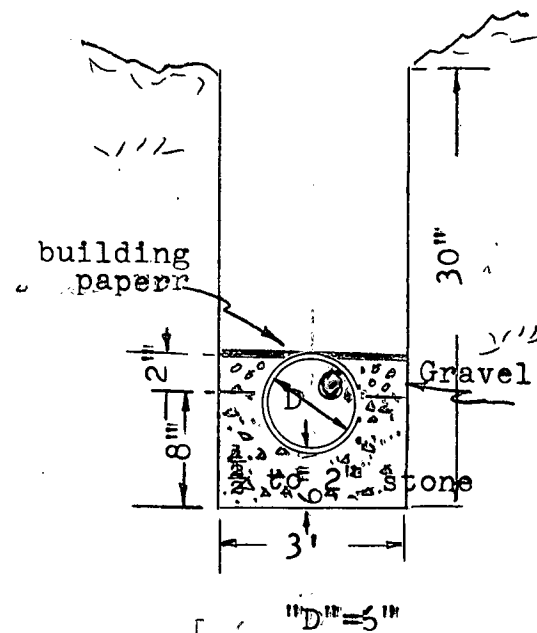
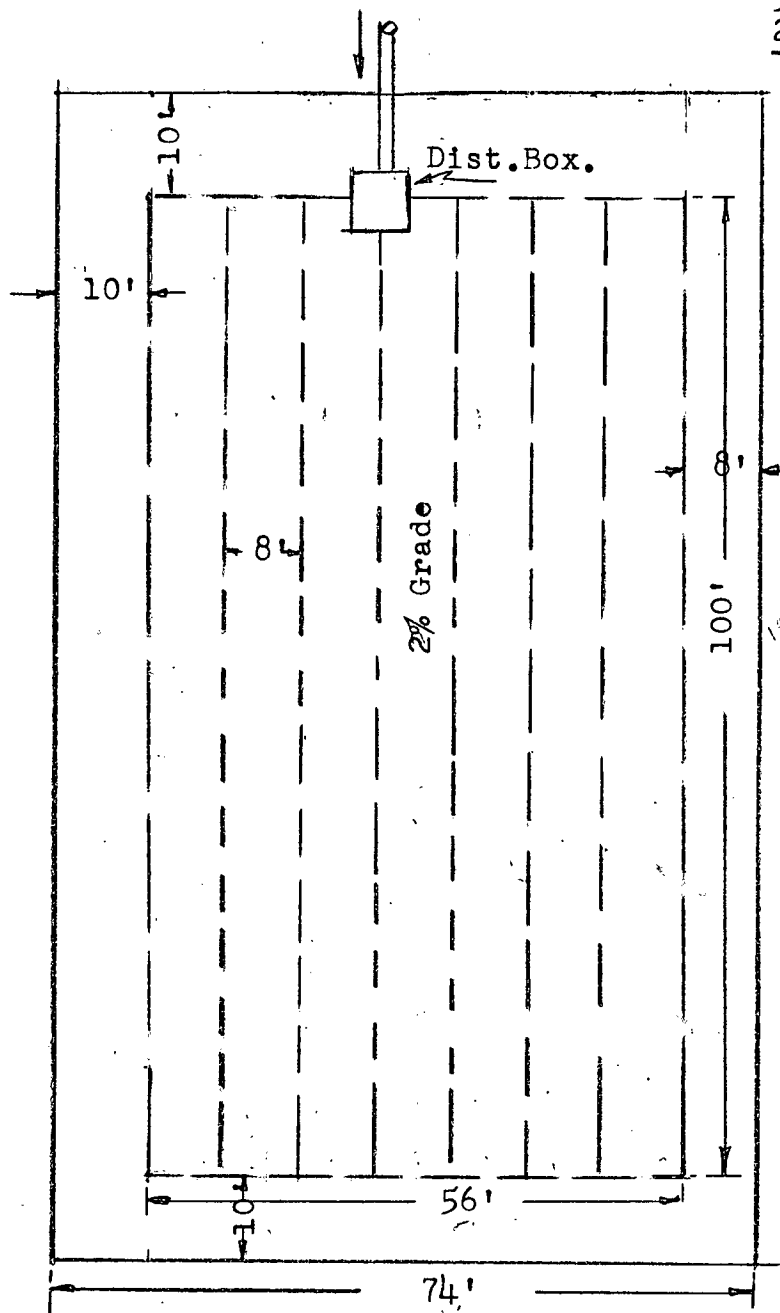
TRENCH = 3' IN WIDTH

$\frac{2362'}{3} = 790 \text{ FT. OF TRENCH.}$

AUXILIARY

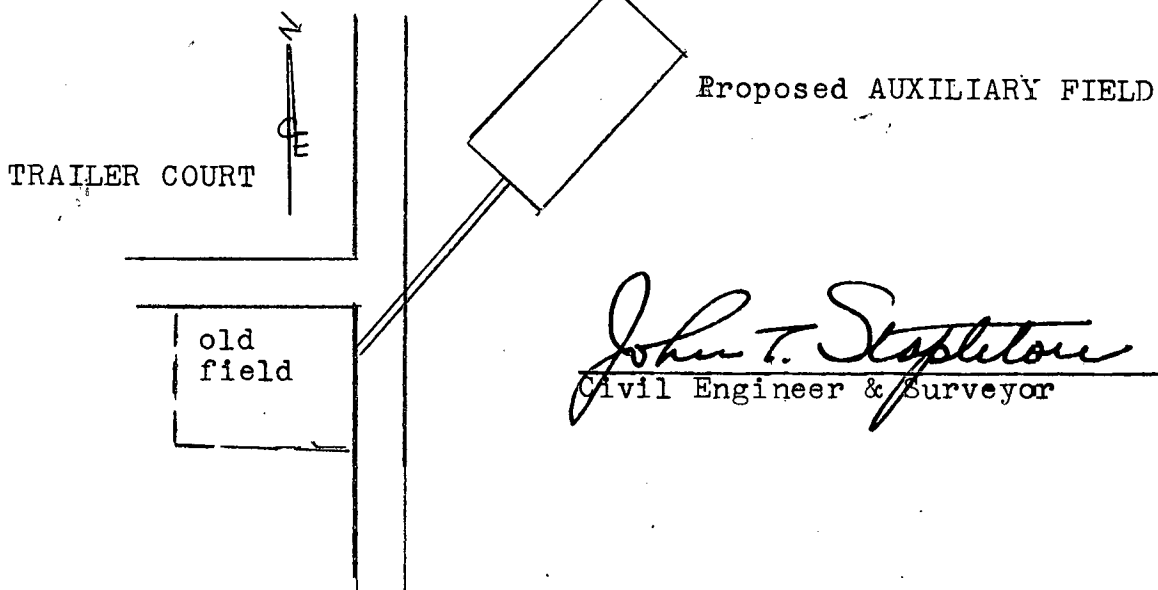
Auxiliary Filter Bed
for
Johnson Avenue Trail Park

Percolation Test = 4" per Hour
21 Trailer @ 150 Gal. per Day
150 x 21 = 3150 Gallons
Chart = 75 Sq. Ft. per gal.
3150 x 75 = 2362 SF. for Field
 $\frac{2362}{3} = 800$ ft. of trench



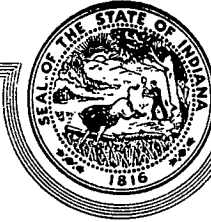
October 11, 1965

Open Field



John T. Stapleton
Civil Engineer & Surveyor

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

September 24, 1965

Mr. Willard Van Slyke
R. R. 9
Bloomington, Indiana

Dear Mr. Van Slyke:

Re: Drawing of Unlicensed
Mobile Home Park on Beech Lane
near Ison Road
Monroe County

This office has reviewed the drawing of your park, and, based on this information, the park does not comply with the following sections of the Mobile Home Park Law and Regulation HSE 21:

1. Section 13 Water Supply
Consult Regulation HSE 21, items numbered 22 thru 29 and Bulletin S.E. 13 for water supply requirements.
2. Section 14 Sewage Disposal
Adequate information was not submitted to determine the absorption area required. Consult Regulation HSE 21 items numbered 30 thru 36 and Bulletin S.E. 13 for sewage disposal requirements.

The following information is also needed:

1. The method used to store and properly dispose of garbage and trash.
2. The location and distance from the park to city water and city sewer service.

Enclosed you will find copies of the Mobile Home Park Law, Regulation HSE 21, an Outline Sheet, a Manual for Mobile Home Parks, and Bulletin S.E. 13 for your information.

Mr. Willard Van Slyke

September 24, 1965

Section 101 of Bulletin S.E. 13 gives details of submitting plans to the Indiana State Board of Health for review and approval.

We are returning your drawing for revision if you desire to submit plans for review.

If you have any questions, do not hesitate to contact this office.

Very truly yours,



Chester H. Canham
Sanitary Engineer
Central Area

JRF/sag

Enclosures

cc: Raymond M. Borland, M.D., Director
Monroe County Health Department
✓ Mr. John Stapleton

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

December 29, 1964

Mr. Frank Benhan
2310 West Third Street
Bloomington, Indiana

Dear Mr. Benhan:

Re: Proposed Trailer Park
Bloomington, Monroe County

We have completed a preliminary review of plans for your proposed mobile home park. The plans are insufficient in detail for us to evaluate the project. We offer the following comments:

1. Percolation tests to determine the absorption rate of the soil should be conducted and the results shown on your plans. ✓
2. If it is shown that a septic tank-absorption field type of sewage disposal system is satisfactory, then the absorption system should be consolidated into one absorption field. We do not recommend three separate absorption fields.
3. Show complete detail drawing on how the absorption system is to be constructed. Indicate slope of sewers.
4. Water lines which cross sewer lines should be placed at a minimum of 18-inches above any sewer line. Show the elevation of these water lines in relation to the sewer lines.
5. Submit drawing of typical water and sewer connection at each trailer lot.

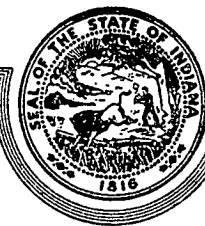
Upon submittal of the above information, we will continue our review of this proposed project. We are returning your plot plan, and enclosing a copy of Bulletin S.E. 13 for your use.

Very truly yours,

Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

FMH/pag
cc: John Stapleton, Surveyor
Monroe County Health
Officer
Chester H. Canham

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46204

December 2, 1964

Mr. Tommy M. McCammon
300 South Fairview
Bloomington, Indiana

Dear Mr. McCammon:

Re: Proposed Mobile Home Park
Bloomington, Monroe County

This will acknowledge receipt of plans for a proposed mobile home park which would contain space and facilities for fifteen (15) mobile homes. This project was discussed with you personally by a representative of our office on November 5, 1964. It was pointed out that it would not be satisfactory to construct the septic tank and absorption field in the same area in which mobile homes are to be located. Then too, an absorption field type of sewage disposal system would not function properly in a low area which is subject to flooding.

It is reported that the city sanitary sewer system is approximately 1,000 feet from the proposed mobile home park site. At a later date, this project will be reviewed based on the assumption that a connection will be made to the city sanitary sewer system.

We are returning your plot plan for your file.

Very truly yours,

Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

FMH/se

Enclosure

cc: Monroe County Health Officer
Monroe County Plan Commission ✓
Central Area

STATE - - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

December 2, 1944

Mr. Marvin Abram
2327 North Roadway
Bloomington, Indiana

Dear Mr. Abram:

Re: Housing Development
located at 2327 N. Roadway
Bloomington, Monroe County

Field observations and inspections confirm that you have a duplex housing development under construction at the above address. This is to remind you that plans for sewage facilities to serve the development have not been submitted to or approved by the State Board of Health as required by Regulation 12B 14, a copy of which is enclosed.

A survey at the construction site by one of our representatives has shown that there is inadequate area to properly install a septic tank and absorption system between the buildings and the adjacent property lines as you now propose. The installation of such systems in the area designated is impractical and unacceptable for several reasons: the ground slopes are steep; flooding of the absorption system will occur during periods of rainfall runoff; limestone is located near the ground surface, and, in some locations, is out cropping; and portions of the systems are proposed to be located in fill.

It should be noted that this development is located on the watershed of Griffey reservoir approximately one mile from the water supply intake structure. Any failure of sewage facilities represents a potential pollution hazard to Griffey reservoir and the city's water supply.

Dr. Carvin Abram

December 2, 1964

It is, therefore, imperative that adequate and satisfactory sewage facilities be provided for your development. Plans and specifications for these facilities should be prepared and submitted to the State Board of Health without delay.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

Enclosure: HSB 14

CNC/xyz

cc: F. L. Wilson, M.D.

Monroe County Health Officer
Taylor Construction Co. c/o Mr. Rayas Nelson
1111 Shadeland, Indianapolis

Hon. John Hooker, Jr., Mayor

Ray E. Long, City Engineer

Monroe County Commissioners

/ Monroe County Plan Commission

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

May 28, 1963

First Highland Corporation
P. O. Box 354
Bloomington, Indiana

Gentlemen:

Re: Approval of Plans and Specifications for
Sanitary Sewers, Highland Village
Subdivision, 7th and 8th Sections
Bloomington, Monroe County

You are hereby notified that the State Health Commissioner of the State of Indiana has this 28th day of May, 1963, approved the plans and specifications for the construction of sanitary sewers to serve approximately 128 lots of the Highland Village Subdivision, Sections 7 and 8.

This project will include the construction of approximately 4,557 feet of 8 inch sanitary sewers connecting to an existing 140 gpm Bloomington lift station located approximately 220 feet southeast of the intersection of Village Drive and Doyle Avenue.

This approval is given with the following condition: That the Bloomington Board of Public Works agrees to the proposed sanitary sewer connection and will provide the maintenance for this sewer system.

These plans and specifications were prepared and certified by John T. Stapleton, P. E., Bloomington, and submitted on May 13 and May 20, 1963.

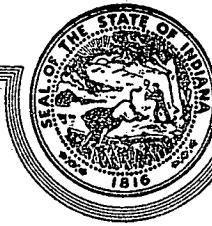
This approval shall be void if construction is not begun before June 1, 1964.

Sincerely,

A. C. FUTT, M. D.
STATE HEALTH COMMISSIONER
INDIANA STATE BOARD OF HEALTH

Approval No. 6339
cc: John T. Stapleton, P. E.
Board of Public Works,
Bloomington
Bloomington City Engineer
Federal Housing Administration

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1380 West Michigan Street
Indianapolis, Indiana 46207

December 3, 1964

Mr. Norman Reeves
c/o Hook Drug Company
2800 Enterprise
Indianapolis, Indiana

Dear Mr. Reeves:

Re: Proposed Subdivision
Salt Creek Realty Co.
Monroe County

This will confirm remarks made during our telephone conversation of November 30, 1964, regarding a proposed subdivision in the Monroe Reservoir area.

In accordance with State Board of Health Regulation HSE 14, plans and specifications of the proposed sewer system and sewage treatment plant must be submitted to the State Board of Health prior to construction. The same procedure is necessary for the water supply in accordance with Regulation HSE 5. These plans must be prepared by a professional engineer legally registered in the State of Indiana.

Before making a final decision on the development of a water supply, we would suggest that you investigate the future availability of larger water systems in the area.

If we can assist you further, please do not hesitate to call on us.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

CHC/amg
cc: Mr. A. F. Hook
5240 N. Illinois Street
Indianapolis
✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

November 6, 1964

Mr. Cletis Sparks
2455 Hickory Leaf Drive
Bloomington, Indiana 47401

Dear Mr. Sparks:

Re: Proposed Mobile Home Park
Monroe County

Your letter of October 24, 1964, addressed to the Indiana State Board of Health requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

Information as to construction costs and park layout can possibly be obtained from the Indiana Mobile Home Association, Inc., 3738 West Michigan Street, Indianapolis, Indiana.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Cletis Sparks

November 6, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer

✓ Monroe County Plan Commission

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

November 13, 1964

Mr. Arthur Pastor
R. R. 2, Box 172B
Brownsburg, Indiana

Dear Mr. Pastor:

Re: Proposed Mobile Home Park
Monroe County

Your telephone call of November 9, 1964, requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

Most areas in Monroe County are not suitable for a septic tank and absorption field sewage disposal system; therefore, we advise you to thoroughly investigate other possibilities of properly disposing of sewage.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Arthur Pastor

November 13, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

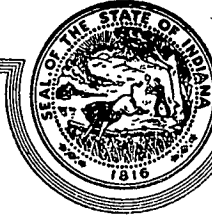
Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer

✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 23, 1964

Mr. Gary L. Gillham
Box 624
Bloomington, Indiana

Dear Mr. Gillham:

Re: Proposed Mobile Home Park
Monroe County

Your letter of October 22, 1964, addressed to the Indiana State Board of Health requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advice you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

Most areas in Monroe County are not suitable for a septic tank and absorption field sewage disposal system; therefore, we advise you to thoroughly investigate other possibilities of properly disposing of sewage.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, covers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Garry L. Gillham

October 28, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/mag

Enclosures

cc: Otto F. Rogers, M.D.

City Health Officer

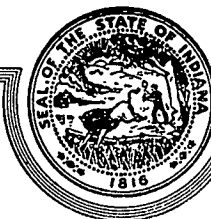
Bloomington City Plan Commission

T. L. Wilson, M.D.

County Health Officer

✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 23, 1964

Mrs. Avis Haltsclaw
2404 Milton
Bloomington, Indiana

Dear Mrs. Haltsclaw:

Re: Trailers Parked At
2400 Milton
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 15, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

MEM/eng

Enclosures: Mobile Home Park Law
and Regulation H3E 21

cc: T. L. Wilcan, H.D.
Monroe County Health Officer
Thomas A. Hendley, Prosecuting Attorney
Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 28, 1964

Mr. Jerry Runyon
945 Ranson
Bloomington, Indiana

Dear Mr. Runyon:

Re: Two trailers parked on
lot at 945 Ranson
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 15, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

REM/zmg

Enclosures: Mobile Home Park Law
and Regulation HSE 21

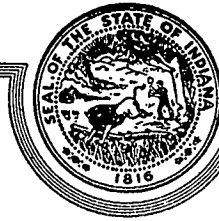
cc: T. L. Wilson, M.D.

Monroe County Health Officer

Thomas A. Hoadley, Prosecuting Attorney

Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 28, 1964

Mrs. Hulda McCarron
300 South Fairview
Bloomington, Indiana

Dear Mrs. McCarron:

Re: Trailer Parked At
701 Ralston
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 15, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

HEH/ang

Enclosures: Mobile Home Park Law
and Regulation HSE 21

cc: T. L. Wilson, M.D.
Monroe County Health Officer
Thomas A. Hoadley, Prosecuting Attorney
Monroe County Plan Commission

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 20, 1964

Mr. John Nichols
335 West 39th Street
Indianapolis, Indiana
c/o Mr. John Stith

Dear Mr. Nichols:

Re: Unlicensed Mobile Home Park
407 North Adams Street
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers from the premises immediately.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

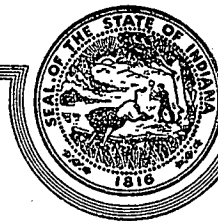
Chester H. Canham
Sanitary Engineer
Central Area

REN/enc

Enclosures: Mobile Home Park Law and
Regulation HSE 21

cc: T. L. Wilson, M.D., Monroe County Health Officer
Thomas A. Hoadley, Prosecuting Attorney
Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 20, 1964

Mr. Tom Bartlett
2700 Smith Pike
Bloomington, Indiana

Dear Mr. Bartlett:

Re: Trailers parked on Fairview Drive
One block south of West Allen Street
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 1, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

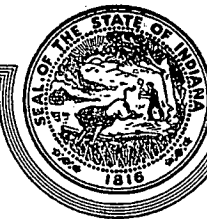
Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

REM/arg

Enclosures: Mobile Home Park Law and Regulation HSB 21
cc: T. L. Wilson, M.D., Monroe County Health Officer
Thomas A. Hoadley, Prosecuting Attorney
Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 14, 1964

Mr. Morris L. Souders
718 South Washington
Bloomington, Indiana

Dear Mr. Souders:

Re: Proposed Mobile Home Park
Monroe County

This will confirm verbal recommendations made during your visit to this office October 13, 1964, in regard to mobile home park construction.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

During your visit to this office, you were given a copy of the Mobile Home Park Licensing Law, Regulation Hse 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Morris L. Souders

October 11, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

cc: T. L. Wilson, M.D.
Monroe County Health Officer
✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

September 16, 1964

Mrs. Doris Staley
2601 S. Bryan
Bloomington, Indiana

Dear Mrs. Staley:

Re: Unlicensed Mobile Home Park
Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than October 10, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

RM/zmg

Enclosures: Mobile Home Park Law and Regulation HSE 21

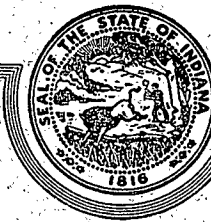
cc: T. L. Wilson, M.D.

Monroe County Health Officer

Thomas A. Hoadley, Prosecuting Attorney

Monroe County Plan Commission

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

August 21, 1964

Mr. Charles Fitzgerald
R. R. 1, Box 89
Bloomington, Indiana

Dear Mr. Fitzgerald:

Re: Proposed Mobile Home Park
Monroe County

Your telephone call of August 21, 1964, requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Charles Fitzgerald

August 21, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham
Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

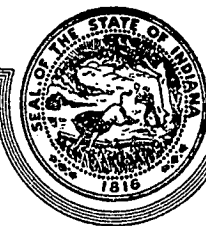
Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer

✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

August 25, 1964

Mr. Sterling Trimble
Vernal Pike
Bloomington, Indiana

Dear Mr. Trimble:

Re: Unlicensed Mobile Home Park
Vernal Pike
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than September 21, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRP/smg

Enclosures: Mobile Home Law
Regulation HSE 21

cc: T. L. Wilson, M.D.

Monroe County Health Officer

Monroe County Plan Commission

Thomas A. Hoadley, Prosecuting Attorney

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207
September 2, 1964

Commercial Service Co.
Box 91
Bloomington, Indiana

Attention: Joseph Hamros

Dear Mr. Hamros:

Re: Proposed Mobile Home Park
Monroe County

Your telephone call of August 28, 1964, requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

Commercial Service Co.
Attn; Joseph Hamros

September 2, 1964

If you have any questions, do not hesitate to contact this office.

Very truly yours,

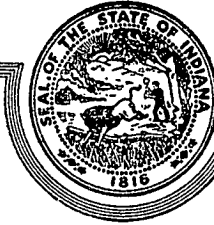
Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg
Enclosures

cc: T. L. Wilson, M.D.
Monroe County Health Officer
/ Monroe County Plan Commission

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

September 16, 1964

Mr. William Boltinghouse
2503 S. Bryan
Bloomington, Indiana

Dear Mr. Boltinghouse:

Re: Unlicensed Mobile Home Park
Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than October 10, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/eng

Enclosures: Mobile Home Park Law
and Regulation HSB 21

cc: T. L. Wilson, H.D.

Monroe County Health Officer

Thomas A. Hoadley, Prosecuting Attorney

Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 2, 1964

Mr. Richard Compton
R. R. 10
Bloomington, Indiana

Dear Mr. Compton:

Re: Proposed Mobile Home Park
Monroe County

Your telephone call of September 28, 1964, requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Richard Compton

October 2, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/jrt

Enclosures

cc: T. L. Wilson, M. D.

Monroe County Health Officer

Monroe County Plan Commission ✓

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 2, 1964

Mr. Norman W. Deckerd
424 South College Avenue
Bloomington, Indiana

Dear Mr. Deckerd:

Re: Norman Deckerd
Mobile Home Park
Bloomington, Monroe County

✓ This will acknowledge receipt of plans for a proposed mobile home park which was designed to contain space and facilities for forty (40) independent mobile homes. A review of the plans showed the layout of the park to be generally satisfactory. The water supply which would be provided by a connection to the municipal water system of Bloomington is adequate. However, your proposed sewage disposal system, which incorporates septic tanks and absorption fields, would not function properly in the type of soil that is available in this area.

The results of the percolation tests conducted by our representative on September 17, 1964, showed that the absorption rate of the soil to be unsuitable for this type of a sewage disposal system. Therefore, we cannot recommend approval of this project.

We suggest that you investigate and consider a possible connection to the sanitary sewer system of Bloomington.

If we can be of further service, please feel free to consult with us.

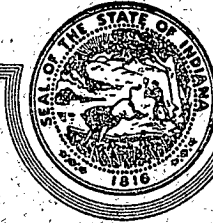
Very truly yours,

Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

FMH/ws

cc: Monroe County Health Officer
Monroe County Planning Commission ✓
John Stapleton, City Engineer
Central Area

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

August 26, 1964

Mr. Clyde Wicks
R. R. 1, Box 113
Bloomington, Indiana

Dear Mr. Wicks:

Re: Proposed Mobile Home Park
Bloomington, Monroe County

Your letter of August 23, 1964, addressed to the Indiana State Board of Health requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

Mr. Clyde Wicks

August 26, 1964

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

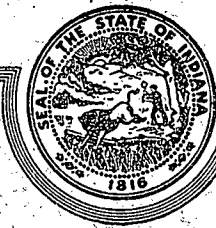
JRF/zmg

Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer
/ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

September 30, 1964

Mr. Wendell Brinson
4420 Etter Drive
Bloomington, Indiana

Dear Mr. Brinson:

Re: Camping Facilities
Monroe Reservoir Area
Monroe County

This will acknowledge your letter of September 23, 1964, regarding camping facilities in the Monroe Reservoir Area.

Enclosed you will find copies of Bulletin S.E. 11, Bulletin S.E. 13, and a booklet titled "Healthful Camping". This information should aid you in planning adequate sanitary facilities for your camp. We wish to point out at this time that sanitary privies are more satisfactory in some cases than a septic tank-absorption system.

Plans should be submitted to the Indiana State Board of Health for review and approval before any construction is undertaken. Before developing plans, you should contact your county planning commission concerning zoning requirements.

If you have any further questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

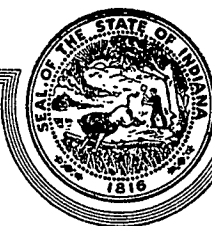
JRF/zmg
Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer

✓ Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

September 30, 1964

Mr. Layton Gooldy
110 West 4th Street
Bloomington, Indiana

Dear Mr. Gooldy:

Re: Proposed Mobile Home Park
Monroe County

Your letter of September 18, 1964, addressed to the Indiana State Board of Health requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

Mr. Layton Gooldy

September 30, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,



Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

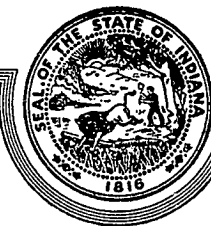
Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer

Monroe County Plan Commission

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 7, 1964

Mr. Clarence Brummett
R. R. 5
Bloomington, Indiana

Dear Mr. Brummett:

Re: Trailers Located at
R. R. 5, Box 418
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 1, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

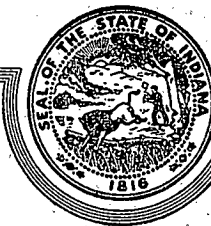
REM/zmg

Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer
Monroe County Planning Commission
Thomas A. Hoadley, Prosecuting Attorney

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

October 7, 1964

Mr. Phillip Archer
R. R. 5
Bloomington, Indiana

Dear Mr. Archer:

Re: 2 Trailers Located just East of
Junction of Rockport Rd. and
That Road, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A mobile home park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than December 1, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

Very truly yours,

Chester H. Canham
Chester H. Canham
Sanitary Engineer
Central Area

REM/ang

Enclosures

cc: T. L. Wilson, M.D.

Monroe County Health Officer
Monroe County Planning Commission
Thomas A. Hoadley, Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

July 10, 1964

Mr. William K. Hanna
120 South Kimble Drive
Bloomington, Indiana

Dear Mr. Hanna:

Re: Proposed Mobile Home Park
Bloomington, Monroe County

We have completed our review of revised plans for your proposed mobile home park which will contain space and facilities for twenty (20) independent mobile homes. After reviewing the layout and the sanitary facilities, we wish to state that we have no objections to the proposed project.

However, the following conditions shall be fulfilled in the construction and operation of your mobile home park.

1. That all necessary permits, including zoning, be obtained.
2. That the water supply connection be acceptable to the City of Bloomington.
3. The absorption field serving lots 2, 3, 8, 7 and 6 shall be constructed with 1,500 square feet of trench bottom area. The absorption field serving lots 10, 11, 12, 13, 14, 17 and 18 shall be constructed with 2,100 square feet of trench bottom area.
4. That a cleanout shall be incorporated in the sewer system at each change in direction.
5. That necessary arrangements will be made to provide for satisfactory storage, collection, and disposal of garbage and trash.
6. That, if pollution or nuisance conditions are created, immediate corrective action will be taken.

Mr. William K. Hanna

- 2 -

July 10, 1964

7. That the State Board of Health be notified in time to make all necessary inspections.

We trust that the above conditions will be fulfilled.

Very truly yours,



Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

FMH/jrt

64-20

cc: Board of Public Works

Monroe County Planning Commission✓

Monroe County Health Officer

Chester Canham

STATE - INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

July 13, 1964

Mr. Arthur E. King
2445 W. 3rd Street
Bloomington, Indiana

Dear Mr. King:

Re: Proposed Mobile Home Park
Monroe County

Your letter of July 7, 1964, addressed to the Indiana State Board of Health requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspections of roughed-in plumbing and sewage disposal facilities before septic tanks, sewers, and secondary disposal systems are covered. Your request for an inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

Mr. Arthur E. King

July 13, 1964

If you have any questions, do not hesitate to contact this office.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

ARF/zmg

Enclosures

cc: T. L. Wilson, M.D.

✓ Monroe County Health Officer

✓ Monroe County Plan Commission

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

April 20, 1964

Mr. Sam Kagan
6272 Washington Blvd.
Indianapolis, Indiana

Dear Mr. Kagan:

Re: Proposed Mobile Home Park
Monroe County

Your telephone call of April 20, 1964, requesting information in regard to new mobile home park construction has been referred to me.

Plans for your proposed mobile home park must be submitted several weeks before you expect to undertake park construction in order to allow adequate time for us to review your drawings and advise you pertaining to the requirements of the Mobile Home Park Licensing Law and Regulations. Before developing plans, you should contact your local county and/or city planning commission concerning local zoning requirements.

We are sending you a copy of the Mobile Home Park Licensing Law, Regulation HSE 21, Bulletin S.E. 13, a manual for mobile home parks and an outline sheet for mobile home park plans to aid you in preparing satisfactory plans. We would recommend that plans and specifications be prepared by a registered engineer or architect proficient in this type of work.

The construction of your proposed park should not be undertaken until you receive a letter approving your plans from the Indiana State Board of Health. After plans have been approved, this office should be notified in time to make inspection should allow ample time for our representative to include same in his itinerary, which is planned one week in advance to conserve time and to economize on travel expenses.

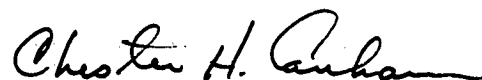
Mr. Sam Kagan

April 20, 1964

You should apply for a Mobile Home Park License after your park construction has been approved. Your Mobile Home Park License must be obtained before you park more than one mobile home.

If you have any questions, do not hesitate to contact this office.

Very truly yours,



Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg
enclosures

cc: T. L. Wilson, H.D.
Monroe County Health Officer
✓ Monroe County Planning Commission

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

March 31, 1964

Mr. Earl L. Sims
2408 Evergreen Drive
Bloomington, Indiana

Dear Mr. Sims:

Re: Sims Trailer Court
513 N. Johnson Avenue
Bloomington, Monroe County

This will acknowledge receipt of the drawing of your park.

The following information and changes will be required before an inspection and approval can be given for your park:

1. A detailed drawing of a typical water and sewer connection should be submitted.
2. A cross sectional drawing of the finger system should be submitted.
3. The finger system should be reconstructed in order to eliminate a single finger or line. This could be done by adding tile where have indicated on your drawing.
4. The type shut off valve should be indicated on the drawing.
5. The distance between the sewer connection and water connection should be indicated. There should be a minimum of 5 feet horizontal distance between the two connections.

We are returning your drawings in order that the above additional information may be added to your plans.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg
encl:

cc: T. L. Wilson, M.D.

Monroe County Health Officer
Monroe County Planning Commission

STATE OF INDIANA



INDIANAPOLIS

STATE BOARD OF HEALTH

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46207

June 25, 1964

Mr. John Stapleton
County Engineer
Court House
Bloomington, Indiana

Dear Mr. Stapleton:

Re: Monroe Reservoir
Sanitary Facilities

Since our telephone conversation of June 24, I have discussed your request for a meeting with Don Ort of our Division.

We will plan to meet with you, the planning commission, and county commissioners at 7:30 P.M. on July 7 at the Monroe County Court House to discuss phases of planning and zoning as they pertain to sanitation.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

CHC/zmg
cc: Don Ort

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

February 7, 1964

Mr. Frank Benham
2310 West 3rd
Bloomington, Indiana

Dear Mr. Benham:

Re: Unlicensed Mobile Home Park
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than March 31, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg
encl: Mobile Home Park Law
cc: T. L. Wilson, County Health Officer
Monroe County Plan Commission
Thomas A. Hoadley, Monroe County Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health
February 4, 1964

Mr. Earl L. Sims
2408 Evergreen Drive
Bloomington, Indiana

Dear Mr. Sims:

Re: Unlicensed Mobile Home Park
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than March 31, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

encl: Mobile Home Park Law

cc: T. L. Wilson, M.D., County Health Officer

Monroe County Plan Commission

Thomas A. Hoadley, Monroe County Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

February 4, 1964

Mr. William Hanna
207 E. 19th Street
Bloomington, Indiana

Dear Mr. Hanna:

Re: Unlicensed Mobile Home Park
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than March 31, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

encl: Mobile Home Park Law

cc: T. L. Wilson, M.D., County Health Officer

Monroe County Plan Commission

Thomas A. Hoadley, Monroe County Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

February 4, 1964

Mr. Robert Huntley
325 North Johnson Avenue
Bloomington, Indiana

Dear Mr. Huntley:

Re: Unlicensed Mobile Home Park
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than March 31, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

encl: Mobile Home Park Law

cc: T. L. Wilson, M.D., County Health Officer
Monroe County Plan Commission

Thomas A. Hoadley, Monroe County Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

February 4, 1964

Mr. Arthur Bridwell
2535 Evergreen Drive
Bloomington, Indiana

Dear Mr. Bridwell:

Re: Unlicensed Mobile Home Park
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than March 31, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg

encl: Mobile Home Park Law

cc: T. L. Wilson, M.D., County Health Officer

✓ Monroe County Plan Commission

Thomas A. Hoadley, Monroe County Prosecuting Attorney

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana

46207



State Board of Health

January 21, 1964

John T. Stapleton
Court House, Room 12
Bloomington, Indiana

Please excuse the informality of our reply to your request ~~of~~ for information but we know you understand that this enables us to answer you more promptly.

We are enclosing the checked material for your information. This material has been marked to answer your specific questions.

- ☒ Bulletin SE 7 "Safe Water Supplies"
- ☐ Bulletin SE 8 "Septic Tank Sewage Disposal Systems"
- ☐ Bulletin SE 11 "The Sanitary Privy"
- ☐ Bulletin SE 12 "You Take It Out"
- ☐ Bulletin SE 14 "Farm Pond Water"
- ☐ Septic Tank Cleaners Law - Chapter 251, Acts of 1959
- ☐ Motel Law - Chapter 302, Acts of 1959
- ☐ Mobile Home Parks Law - Chapter 321, Acts of 1955, As Amended
- ☐ Regulation HSE 21 - Mobile Home Parks
- ☐ Manual, "Mobile Home Parks, Health, Sanitation and Safety"
- ☐ "Outline Sheet for New Mobile Home Parks"
- ☐ Laws and Regulations for Licensed Nursing Homes
- ☐ Manual for Storage, Collection and Sanitary Landfill Disposal of Refuse
- ☐ Definitions "Health Nuisances, Public Nuisances and Property Nuisances"
- ☐ Minimum Housing Standards for Agricultural Labor Camps
- ☐ Insect and Rodent Control Bulletins
- ☒ Other S. E. 13, "Planning Guide for Private Water Supply and Sewage Disposal"

Thank you.

Very truly yours,

Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

DRO/laj
5-20-63

S.B.H. 5-0-55

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana

46207



State Board of Health

January 22, 1964

Mr. John Stapleton, P. E.
Court House, Room 12
Bloomington, Indiana

Dear Mr. Stapleton:

Re: Proposed Mobile Home Park
Bloomington, Monroe County

It is understood from our telephone conversation that you are planning to use a septic tank-absorption field system of sewage disposal for a proposed mobile home park.

This office has reason to believe that a municipal sewer connection is feasible; therefore, an approval of a septic tank sewage disposal system will not be granted unless documentary evidence, considered by this office, shows that a municipal sewer connection is impossible or impractical.

It should be noted that plans and specifications for the construction of the mobile home park must be submitted to and approved by the State Board of Health prior to any construction. Literature is enclosed regarding most items required of plan submittals, i.e., Mobile Home Park Law, Mobile Home Park Regulation HSE 21, Outline Sheet for New Mobile Home Parks, and Mobile Home Park Health, Sanitation, and Safety.

We are available for consultation if any questions or problems arise regarding this planned project.

Very truly yours,

Don R. Ort, Chief
General Sanitation Section
Division of Sanitary Engineering

Enclosures (4)
RHK/ldj
cc: Chester Canham

STATE OF INDIANA

Address Reply to:

Indiana State Board of Health
1330 West Michigan Street
Indianapolis, Indiana



State Board of Health

January 21, 1964

Mr. Robert T. Gibson
2000 N. Smith Pike
Bloomington, Indiana

Dear Mr. Gibson:

Re: Unlicensed Mobile Park
2000 N. Smith Pike
Bloomington, Monroe County

Information obtained by representatives of this office discloses that you are operating a Mobile Home Park in violation of the Mobile Home Park Licensing Law enacted by the 1955 Indiana General Assembly, a copy of which is enclosed for your information and guidance. Section 2 of this Act reads in part that "A mobile home park means an area of land upon which two (2) or more mobile homes are harbored.....". Section 24 of this Act requires that "A Mobile Home Park shall not be operated without first obtaining a license from the State Board".

Pursuant to the requirements of the aforementioned Act, you are hereby ordered to remove all trailers except 1 from the premises not later than February 29, 1964.

Failure to comply with this order will leave us no alternative other than to refer this matter to the Monroe County prosecuting attorney for appropriate action.

This office has no desire to resort to such drastic action unless there is no other alternative. Your cooperation in this matter is urgently requested.

Very truly yours,

Chester H. Canham

Chester H. Canham
Sanitary Engineer
Central Area

JRF/zmg
encl:

cc: T. L. Wilson, M.D., Monroe County Health Officer
✓ Monroe County Plan Commission
Mr. Thomas A. Hoadley, Prosecuting Attorney

Mobile Home Parks
Health, Sanitation, and Safety

INTRODUCTION

THIS MANUAL IS NOT INTENDED TO SERVE AS RULES OR REGULATIONS, BUT MERELY TO PUT IN ONE PLACE THE VARIOUS REQUIREMENTS OF THE INDIANA STATE BOARD OF HEALTH AND THE STATE FIRE MARSHAL PERTAINING TO MOBILE HOME PARKS. THE REGULATIONS AND LAW ARE INCLUDED IN THE APPENDIX AND SHOULD BE REFERRED TO FOR ALL TECHNICAL PURPOSES.

Parked mobile homes as well as all other types of housing may create unhealthful conditions by unsafe water supply, improper disposal of sewage and refuse, overcrowding, the use of common toilet facilities, etc. These conditions can endanger the health and safety not only of the mobile home occupants but of residents of adjacent areas as well. Sanitation as related to the occupancy of a mobile home, requires more than a clean comfortable vehicle. It involves the desire of every mobile home owner to live in a nice neighborhood where safe water is available and where wastes from each mobile home are disposed of without creating a nuisance.

Chapter 321, Acts of 1955, which went into effect on March 11, 1955, designated the State Board of Health as the licensing agency for mobile home parks. The law gives the State Board of Health authority to adopt regulations to carry out the terms of the act. These regulations and the licensing act are in the appendix of this manual.

The licensing act created a mobile home advisory board consisting of one representative of each of the following groups: the mobile home park operators, mobile home dealers, mobile home manufacturers, plan commissions, local health departments and a registered engineer employed by the Indiana State Board of Health. The principal duties of the advisory board are to assist the State Board in improving health within mobile home parks and to approve regulations prior to their adoption by the Indiana State Board of Health.

DEFINITIONS

1. "Mobile Home" means any vehicle, including the equipment sold as a part of a vehicle, which is so constructed as to permit its being used as a conveyance upon public streets or highways by either self-propelled or not self-propelled means which is designed, constructed or reconstructed, or added to by means of an enclosed addition or room in such manner as will permit the occupancy thereof as a dwelling or sleeping place for one or more persons, which is both used and occupied as a dwelling or sleeping place having no foundation other than wheels, jacks, skirting, or other temporary supports.

2. "Mobile Home Park" means an area of land upon which three or more mobile homes are harbored for the purpose of being occupied either free of charge or for revenue purposes, and shall include any building, structure, vehicle or enclosure used or intended for use as a part of the equipment of such mobile home park.

3. "Dependent Mobile Home" means a mobile home which does not possess a toilet, sink, bath or shower facilities.

4. "Partially Dependent Mobile Home" means a mobile home which possesses a toilet, and sink but does not possess a bath or shower facilities.

5. "Independent Mobile Home" means a mobile home which has a self-contained toilet, sink, and bath or shower facilities.

6. "State Board" means the State Board of Health of Indiana.

7. "Local Board" means any local agency of government authorized to enforce the standards of health and sanitation prescribed for mobile homes and mobile home parks by the State Board.

8. "Health Commissioner" means the State Health Commissioner of Indiana.

ADMINISTRATION

License Application

Application for a license to operate a mobile home park shall be made to the State Board of Health. Application form for a license will be furnished by the State Board, upon request of the park operator. (See appendix #3 for a sample application form.)

License

A new mobile home park shall not be placed in operation without first obtaining a license from the State Board. Any person maintaining or operating a new mobile home park without first obtaining a license or after revocation of his license shall be guilty of a misdemeanor and subject to the penalties prescribed in the licensing act, Chapter 321, Acts of 1955. (See appendix #3.)

Term of License

The license to operate a mobile home park shall be issued for one year and shall expire on midnight December 31 of each year.

The park may continue to operate after the expiration of the license providing an application for a new license has been filed with the State Board and the delay in issuing a new license is not the fault of the applicant.

The State Board may license temporary mobile home parks for a period of six months and waive any of the requirements of the act if the failure to comply with the act is for a temporary period of time, is required by public convenience and the operation of the park will not jeopardize the health and welfare of the occupants of the park and the community. As a matter of general policy no more than one temporary license will be issued to any mobile home park.

Revocation and Denial of License

The license for a mobile home park may be revoked or denied by the State Board for a violation of the licensing law or the regulations of the State Board.

The following procedure will be followed in revoking or denying a license.

The State Board shall provide a written notice to a mobile home operator of the revocation of his license, the denial of his application for a license, or the denial of the approval of the construction or alteration of a park. The notice shall contain the following:

1. The statement of the manner in which the licensee has failed to comply with the law or rules and regulations of the State Board and
2. The length of time available to correct the violation.

Upon denial or revocation of a license the applicant has the right of a hearing as granted in Chapter 365, Acts of 1947.

Penalties

Any person maintaining or operating a mobile home park without first obtaining a license or after the revocation of his license shall be guilty of a misdemeanor and upon conviction shall be punished by a fine not exceeding three hundred dollars and/or imprisonment in the county jail not exceeding ninety days.

License Fees

The annual license fee for a mobile home park shall be based on the number of lots available for use and not on the number of lots occupied. The fees shall be as follows:

3 to 50 inclusive	\$22.50	151 to 200 inclusive	\$67.50
51 to 100 inclusive	37.50	201 to 250 inclusive	82.50
101 to 150 inclusive	52.50	251 to 300 inclusive	97.50

The license fee for a new park starting in operation after the first day of August shall be one-half the annual fee. Mobile home parks operated by units of government shall not be required to pay a license fee.

Right to Investigate

The State Board or any person designated by the State Board may at any reasonable time inspect the premises and take necessary and reasonable steps in a mobile home park prior to the granting of an application or after the granting of an application to determine whether or not a mobile home park is in compliance with the law and the regulations of the State Board.

PARK CONSTRUCTION

Plans Required

The construction of new mobile home parks or the alteration of existing parks shall be made only after the plans have been submitted to and approved by the State Board. The plans shall be in sufficient detail so that it can be determined if all the provisions of the licensing law and Regulation H.S.E. 21 will be complied with.

The following items must be shown on the plans:

1. Park layout showing lot sizes, streets, vehicle parking areas, well location, sewer and water lines, community building, sewage disposal system, lighting facilities and walkways.

2. Plans for providing surface drainage.
3. Details of the construction of the sewage disposal system, including soil percolation tests if a soil absorption type system is to be used. See Bulletin S.E. 13 (Appendix #3.)
4. Details of the construction of the sewer system including size, slope, material, and manhole and cleanout construction and location.
5. Water supply including expected capacity and size of well, pump rating, water storage facilities, method of sealing well, housing for pump and storage tank, distribution system including size, material and valve locations. See Bulletin S.E. 13 (Appendix #3.)
6. Construction of the community building including an isometric sketch of the plumbing.
7. A typical water and sewer connection.
8. Lighting facilities.
9. Construction of the incinerator, if one is to be used.

Park Location

All sites are not suitable for the construction of mobile home parks. There are many factors to consider. One of the most important is the possibilities of disposing of sewage in an approved manner. In areas where clay soil predominates a septic tank and absorption system is not a suitable means of sewage disposal. Other methods of sewage disposal require a suitable receiving stream in which to discharge the effluent from the treatment process. Streams which do not provide adequate dilution or where the water down stream is used for a drinking water supply or for recreational processes may not be a suitable stream in which to discharge the effluent from the sewage treatment process. In some localities adequate ground water is not available to meet the water supply needs of the park. A thorough investigation should be made of the site before proceeding with plans for the construction of a park. Other items that must be considered are listed below:

1. Where city, town or county plan commissioners are functioning, site proposals and plans for new mobile home parks should first be reviewed by the appropriate plan commission for zoning approval. Any local requirements or regulations exceeding the minimum requirements of the State Board should be followed.
2. The site of a mobile home park shall be located in a well drained area.
3. The lots of a mobile home park shall not be located closer to heavily traveled streets or highways than the safety of the park residents and persons using the streets or highways will permit.

Lots

1. The mobile home park shall be divided into lots with permanent markers indicating the corners of each lot, or an accurate plat shall be available indicating the size and location of each lot.

2. Each lot shall contain a minimum of 1,000 square feet and where mobile homes stay for extended periods of time a minimum of 1,200 square feet is recommended. As mobile homes are now being manufactured 46 to 48 feet in length, it is desirable to provide some lots of adequate size to accommodate them and comply with the separation requirements of the law.

3. Each lot shall be proportioned to permit the parking of mobile homes a minimum of ten feet apart.

4. Each lot shall be located so that the mobile home can be parked no closer to the lot line of the adjoining property than the requirements of local zoning ordinances permit. In areas where there are no zoning ordinances the mobile home shall not be parked closer than five feet from the lot line of the property adjoining the mobile home park or a street or a highway.

5. A lot which will be used for the parking of motor vehicles as well as mobile homes shall be sized to permit a separation of three feet between the vehicle and the mobile home on the lot and ten feet between the vehicle and the mobile home on an adjoining lot.

6. Each lot shall be located so that the mobile home parked on it shall have ready and free access to the streets in the park.

Streets and Walks

1. One-way streets in mobile home parks shall be a minimum of ten feet in width. Two-way streets shall be a minimum of twenty feet in width. Additional width or separate areas must be provided for the parking of vehicles.

2. The roads shall be maintained so as to be dust proof. This may be accomplished by installing permanent drives of concrete or blacktop, sealing gravel drives with road oil, addition of calcium chloride, or by other means which will maintain the roads in a dust proof condition.

3. There shall be no dead-end streets for vehicle traffic. A turn-around will serve to eliminate a dead end.

4. Walks shall be provided to the community building separate from the roads of the park.

Auto Parking Facilities

1. A minimum of auto parking space adequate to furnish one space per each mobile home lot shall be provided within the property lines of the park.

2. The parking space may be included on the mobile home lot, on the park street or on separate parking lots. If separate parking lots are used, auto parking spaces shall be located within 300 feet, measured along the line of travel, of the mobile home lot it will serve.

Community Building

1. Community buildings, including their plumbing and wiring, shall be constructed in accordance with the rules and regulations of the Administrative Building Council of Indiana or the applicable local code whichever is the more stringent.

2. Community buildings shall have impervious floors such as concrete sloped to floor drains.

3. All exterior openings shall be covered with a 16 mesh screen or equivalent during periods of the year when insects are prevalent.

4. The community building shall be maintained in a clean and sanitary condition at all times.

5. The community building shall be maintained at a temperature of at least sixty-eight degrees Fahrenheit.

6. The community building shall be located at least 15 feet from any mobile home.

7. Toilet and laundry rooms shall be well lighted. The laundry room shall have illumination of at least 40 foot candles on work areas such as washtubs, ironing boards and sorting tables. The toilet rooms shall have an illumination of 40 foot candles in front of mirrors. Where walls and ceilings are light colored this required illumination can be obtained by providing lighting at the rate of approximately 1-watt incandescent or 1/3-watt fluorescent bulbs for each square foot of floor area (ie: 1 40-watt incandescent bulb per 40 square feet.)

8. Hot water should be provided for lavatory, bathing and laundry room fixtures with facilities of sufficient capacity to maintain a minimum temperature of 120° F. at all times.

Toilet Facilities

1. A minimum of one water closet and a lavatory shall be provided in each community building.

2. Toilet facilities shall be provided in a mobile home park for each dependent mobile home in the park as follows: One water closet shall be provided for men, one water closet for women, for each fifteen or fraction thereof of dependent mobile homes in a park, and one individual men's urinal shall be provided for each fifteen dependent mobile homes in a mobile home park. Each water closet shall be contained in a separate compartment which shall have a minimum width of at least thirty-two inches. The water closets shall be provided for men and women in separate sound-proof and vision-proof rooms. One lavatory shall be provided for each water closet in a community building. The lavatories shall be in the same room but separated from the water closet compartments.

3. In mobile home parks accommodating dependent mobile homes there shall be facilities for emptying and cleaning night soil containers. A service sink with integral flushing ring is recommended. This service sink should have hot and cold water faucets located over the bowl. It is recommended the service sink be installed in a separate room of the community building with a single, direct opening to the outside.

Bathing Facilities

1. The following bathing facilities shall be provided for both men and women for each fifteen or a fraction thereof of dependent and partially dependent mobile homes:

- (1) One shower or bathtub in a separate compartment.

(2) A dressing room of not less than two and one-half feet by three feet in size.

Laundry Facilities

There shall be provided in each mobile home park a laundry containing at least one laundry tray, connected to the sanitary sewer, for each forty or fraction thereof of mobile homes. An automatic washer, whether or not a charge is made for its use, is considered equivalent to a laundry tray.

Water Supply

1. An adequate, safe, and potable supply of water shall be provided in each mobile home park, capable of furnishing a minimum of 150 gallons per day per mobile home lot.

2. Where a public supply is available a connection shall be made and its water used exclusively.

3. The maximum demand for water will greatly exceed the average demand. The approximate maximum demand can be determined from the following table.

Number of Lots	Demand load in gallons per minute
10	25
25	45
50	65
75	80
100	95
150	115
200	135
250	155
300	170

Only about 25 per cent of the overall capacity of a pressure tank is effective storage. After this reserve is used the tank no longer acts as a storage vessel. Thereafter, the rate of supply from the tank (in order for the pressure not to be reduced) depends on the delivery rate of the pump and piping. The delivery rate to the pressure tank must therefore equal the maximum demand.

The water supply and distribution system shall be sized and constructed to deliver water at 20 pounds per square inch pressure to all mobile homes during periods of peak water demands.

4. Water supplies constructed after adoption of Regulation H.S.E. 21 shall have no well head, well casing, pump, pumping machinery, valve connected with the suction pump or exposed suction pipe located in any pit, room, or space extending below ground level, or in any room or space above the ground which is walled in or otherwise enclosed so that it does not have free drainage.

5. Water supplies constructed after the adoption of Regulation H.S.E. 21 shall have all that part of the suction pipe, drop pipe, or delivery pipe not normally under constant pressure within ten feet of and below the ground surface, surrounded by a water-tight casing pipe extended at least 12 inches above the ground.

6. Each mobile home lot, except those used exclusively for dependent trailers, shall be provided with a cold water tap extending at least 4 inches above

the ground surface. The outlet shall be protected from freezing by the use of a heater tape, insulation or draining when not in use. In no case shall a stop and waste valve or other devices which would allow aspiration or backflow of contaminated water into the potable water system be used.

7. Water distribution systems constructed after the adoption of Regulation H.S.E. 21 shall be separated not less than 10 feet horizontally from a parallel sewer line except a water line may be placed in the same trench with a sewer line provided it is laid on a shelf of undisturbed earth and the bottom on the water line is, at all points, at least 18 inches above the top of the sewer. The water and sewer connection on each lot shall be separated not less than 5 feet horizontally.

8. The wells and water distribution system shall be disinfected, and the bacteriological quality shall be in conformance with Regulation H.S.E. 3, (see appendix #7) before the park is occupied or the water supply used.

Wells or the distribution system after being constructed or repaired should be disinfected with 50 parts per million chlorine solution. The chlorine solution should remain in contact with the well or distribution system for 12 hours and then be pumped or flushed out. Chlorine for this purpose can be purchased in the form of laundry bleach, chlorinated lime, and other chlorine compounds.

9. Construction details of the water supply system not covered in this manual should be as shown in Bulletin S.E. 13 or as approved by the State Board.

SEWAGE DISPOSAL

1. Water carriage systems of sewage collection and disposal shall be provided in all mobile home parks constructed after March 11, 1955 and for all existing parks after January 1, 1960.

2. A mobile home park shall dispose of sewage through the use of a public sewerage system if the public sewerage system is available within a reasonable distance.

3. All components of the sewer and sewage disposal or treatment system shall be located to preclude the possibility of contamination of the park water supply or the water supply of adjoining property owners. All components of the sewerage system shall be located at least one-hundred feet from any water supply well or pump suction line; however, sewers constructed of extra heavy cast iron pipe may be located within the one-hundred foot distance but not closer than thirty feet to the water supply well or a pump suction line when necessary and when approved. Exception: the separations enumerated herein shall not be considered adequate in areas where fissured stone is encountered.

4. A sewer connection equipped to make a water-tight and odor-tight connection shall be provided for each mobile home lot to be used by a partially dependent or independent mobile home. The park operator may or may not furnish the flexible connection between the sewer and mobile home but the park operator shall be responsible to see that an approved connection is made.

5. Storm water or surface drainage shall not be discharged to the park sewer system receiving sanitary wastes from mobile homes and service buildings when a private sewage disposal system is used or when the park sewers connect to a public sanitary sewer.

6. All sewers receiving sanitary wastes shall be constructed with water-tight joints as required by the Plumbing Rules and Regulations of the Administrative Building Council and shall be sloped to provide a minimum velocity of two feet per second to the waste in the sewer. The minimum slope can be determined from the following table:

Sewer Diameter (Inches)	Slope per 100 feet (Inches)
6	8
8	5

7. Sewers constructed after the adoption of Regulation H.S.E. 21 shall have manholes constructed at intervals of 400 feet along the sewer and at every change in size, alignment, or grade or cleanouts the same size as the sewer shall be installed at intervals of 100 feet and at every change in size, alignment, or grade.

8. Sewage flow shall be estimated on the basis of a minimum of 150 gallons per mobile home lot per day.

9. Sewage treatment or disposal facilities utilizing septic tanks and absorption systems or sand filters shall be constructed to the standards and recommendations contained in Bulletin S.E. 13 of the Indiana State Board of Health and should conform to local ordinances whichever is the more stringent (see appendix #3).

10. There are other methods of sewage treatment that may be more suitable in larger installations. These types must be designed to suit the conditions that prevail. An engineer experienced in the design of sewage treatment plants should design these plants.

11. All sewage treatment facilities which have an effluent discharging into the waters of the State shall be designed, constructed and maintained so that the stream standards enumerated in Regulation S.P.C. 1 of the Indiana Stream Pollution Control Board will be maintained (see appendix #10).

Garbage and Trash Storage and Disposal

1. The mobile home park owner and/or operator shall be responsible for satisfactory storage, collection and disposal of garbage, trash and combustible refuse.

2. Garbage and trash shall be stored in fly-tight, water-tight containers which shall be located not more than 150 feet from any mobile home space.

3. There shall be at least one garbage can and one trash can for every two mobile homes. The cans may or may not be furnished by the park operator. The cans shall be placed on racks with at least 8 inches clearance off the ground, on a concrete base, or other approved construction.

4. Garbage and trash, when not collected by a public collection service, shall be collected at least twice a week during the months of June, July, August and September and at least once a week during the other months of the year.

5. The area around the storage cans shall be kept clean and free of litter.

6. During the fly season the area around the storage cans should be sprayed with a residual insecticide at intervals sufficient to maintain a fly control.

7. Garbage, trash and combustible refuse shall be disposed of at a public disposal site or in such other manner that it will not create fly breeding, rodent harborage, odor or smoke nuisances or health, fire, or safety hazards.

8. Garbage or empty food containers shall not be placed in any incinerator constructed for the disposal of combustible refuse. Any person who throws and leaves garbage and refuse on the ground shall be guilty of a misdemeanor and upon conviction can be fined up to \$25.00.

Electrical Work

1. All wiring within the building shall conform to the requirements of the Electrical Rules and Regulations of the Administrative Building Council of Indiana.

2. All electrical work not included under the above code should conform to the regulations of the local utility and to the requirements of the State Fire Marshal (see appendix #9).

Lighting

1. The streets and walks of a mobile home parks shall be adequately lighted.

2. Minimum lighting shall be equal to one sixty-watt bulb located at intervals of 100 feet along the streets and walks and hung at a height of 15 feet above the street or walk with such additional lights as might be required because of natural or artificial obstructions.

Fire Prevention

Fire prevention precautions as outlined in the requirements of Indiana State Fire Marshal shall be followed (see appendix #9).

Grocery Stores

All grocery stores operated as a part of any mobile home park shall conform to the requirements of local ordinances or to Regulation H.F.D. 19 of the State Board of Health whichever is more stringent (see appendix #5).

Restaurants

All eating and drinking establishments operated as a part of a mobile home park shall conform to the requirements of local ordinances or to Regulation H.F.D. 17 of the State Board of Health whichever is more stringent (see appendix #6).

Swimming Pools

All swimming pools operated as a part of a mobile home park shall be constructed and operated in compliance with Regulation H.S.E. 16 of the State Board of Health (see appendix #8).

Register of Guests

Each mobile home park operator shall maintain a register open for the inspection of the State Board or its duly designated representatives containing the following information in relation to each mobile home in a park:

- (1) The names and ages of all occupants.
- (2) The owner of the mobile home.
- (3) The manufacturer and type of mobile home.
- (4) The dates the mobile home entered and left the park.
- (5) Records should be kept for at least three years.

Ejection of Guests

The owner, operator, or caretaker of any mobile home park may eject any person from the premises for nonpayment of charges or fees for accommodations, for violations of law or disorderly conduct, for violation of any regulation of the State Board relating to mobile home parks or for the violation of any rule of the park which is publicly posted within the park. An attorney should be consulted to obtain advice on the ejection procedure.

Lien on Property of Guest

The owner, operator, or caretaker of any mobile home park shall have an innkeeper's lien or hotel keeper's lien upon the property of his guest in the same manner, for the same purposes, and subject to the same restrictions as innkeeper's lien or hotel keeper's lien.

Pets

Domestic animals and house pets shall not be permitted to run at large or commit any nuisance within the limits of a mobile home park.

Reporting of Disease

Every owner, operator or attendant operating a mobile home park shall notify the local health officer immediately of any suspected communicable or contagious disease within the mobile home park.

Parking of Trailers

An occupied mobile home shall not be allowed to remain in a mobile home park unless parked on a mobile home lot designed for that type home.

APPENDIX

- # 1 Chapter 321, Acts of 1955 (Licensing Act)
- # 2 Indiana State Board of Health Regulation H. S. E. 21
(Mobile Home Regulation)
- # 3 Bulletin S.E. 13 (Pertaining to construction of water supply
and sewage disposal facilities)
- # 4 License Application
- # 5 Regulation H.F.D. 19 (Pertaining to Grocery Stores)
- # 6 Regulation H.F.D. 17 (Pertaining to Restaurants)
- # 7 Regulation H.S.E. 3 (Pertaining to Quality of Water)
- # 8 Regulation H.S.E. 16 (Pertaining to Swimming Pools)
- # 9 Requirements of the State Fire Marshal
- #10 Regulation S.P.C. 1 (Pertaining to Stream Standards)

OUTLINE SHEET FOR NEW MOBILE HOME PARKS

This outline is designed to aid in preparing plans on the construction of a new mobile home park. The law and rules and regulations must be met and complete plans must be submitted to this office for approval before construction is started. Read the law and regulations carefully before making plans. The following information is needed before a park is put under construction.

Name of owner: Address: Park name: Location of park: (Give road or street number, distance and direction from nearest city or town, and county in which park is located).

PLAN AND ZONING REQUIREMENTS:

If there is a local plan or zoning commission having jurisdiction over the proposed park location, a statement of approval should be obtained from this plan commission.

SITE:

1. Park boundary lines: Give length, width and area.
 - (a) Number of proposed lots.
 - (b) Size of lots. (Minimum of 1000 sq. ft. Trailers must be at least 10 feet apart.)
2. Describe streets and walks:
3. Describe auto parking: (See Regulation Sect. 6 & 7).
4. Describe park lighting: (See Regulation Sect. 8 & 9).

COMMUNITY BUILDING: (See Regulation Sect. 10 thru 18). (Law Sect. 16 thru 20).

1. Show location; size and type of building construction.
2. Plumbing must comply with State Plumbing Code.
 - (a) Must include an isometric drawing and type of piping and sewers to be used.
3. Describe laundry facilities.
4. Toilets and showers facilities: (Parks having all modern trailers should provide 1 water closet and 1 lavatory). (Parks having non-modern trailers: see Law Sect. 17 & 18).

WATER SUPPLY: (See Regulation Sect. 19 thru 29 where no connection to a public supply is possible.)

1. Location: Give separation distances from sewers, septic tanks, etc.: include the sewers, etc., of adjoining property.
2. Give size and estimated depth of well.
3. Give size of pump and storage facilities.
4. Describe well construction including installation of sanitary well seal.
Note: Pits are prohibited. (See Regulation Sect. 24).

(over)

WATER SYSTEM:

1. Sizes of water lines.
2. Location of water lines in relation to sewers. (See Regulation Sect. 27).
3. Show a detailed sketch of the water shut-off valves at the trailers.
Note: Stop and waste valves are prohibited.

SEWERAGE SYSTEM: (See Regulation HSE 21, Sect. 30 thru 36).

1. Sewer System
 - (a) Type of sewers
 - (b) Size
 - (c) Slope
 - (d) Show location and construction of manholes or cleanouts.
 - (e) Make a detailed sketch of trailer connection.
2. Septic Tank Facilities. (Can only be used where a city sewer is not available).
 - (a) Location of septic tank.
 - (b) Give dimensions, capacity and kind of material of septic tank.
3. Secondary Sewage Treatment Facilities:

It is not permissible to drain a septic tank into any stream, ditch, or to the surface of the ground without giving the sewage additional treatment.

 - (a) Give soil percolation results.
 - (b) Give location, type and size of the absorption system.
 - (c) Show complete detail on how the absorption system is to be constructed.

The Indiana State Board of Health has Bulletin SE 13 which gives information on the design of sewage treatment facilities. This bulletin is available without cost on request.

GARBAGE AND REFUSE COLLECTION AND DISPOSAL:

1. Describe plan.

Mobile Home Parks



Chapter 321, Acts of 1955

As Amended by Chapters 93, 94, Acts of 1957
and Chapter 144, Acts of 1959

Indiana General Assembly

INDIANA STATE BOARD OF HEALTH

1330 West Michigan St.

Indianapolis

MOBILE HOME PARKS

Chapter 321, Acts of 1955 - As Amended

AN ACT to provide for health, sanitation and safety standards for persons occupying mobile homes.

Be it enacted by the General Assembly of the State of Indiana:

SECTION 1. It is the purpose of this act to recognize the mobile home as a suitable and necessary dwelling unit in the State of Indiana. The State Board of Health of Indiana is authorized to require reasonable standards of health, sanitation and safety in using these dwelling units, and to require persons dwelling in mobile homes and mobile park operators to comply with these standards, and to authorize suitable local agencies where they are qualified to enforce the standards adopted.

SECTION 2. The following terms as used in this act shall have the following meaning:

(1) "Mobile Home" means any vehicle, including the equipment sold as a part of a vehicle, which is so constructed as to permit its being used as a conveyance upon public streets or highways by either self-propelled or not self-propelled means, which is designed, constructed or reconstructed, or added to by means of an enclosed addition or room in such manner as will permit the occupancy thereof as a dwelling for one or more persons, which is both used and occupied as a dwelling having no foundation other than wheels, jacks, skirting, or other temporary supports.

(2) "Mobile Home Park" means an area of land upon which two or more mobile homes are harbored for the purpose of being occupied either free of charge or for revenue purposes, and shall include any building, structure, vehicle or enclosure used or intended for use as a part of the equipment of such mobile home park.

(3) "Dependent Mobile Home" means a mobile home which does not possess a toilet, sink, bath or shower facilities.

(4) "Partially Dependent Mobile Home" means a mobile home which possesses a toilet and sink but does not possess a bath or shower facilities.

(5) "Independent Mobile Home" means a mobile home which has a self-contained toilet, sink, and bath or shower facilities.

(6) "State Board" means the State Board of Health of Indiana.

(7) "Local Board" means any local agency of government authorized to enforce the standards of health and sanitation prescribed for mobile homes and mobile home parks by the State Board.

(8) "Health Commissioner" means the State Health Commissioner of Indiana.

SECTION 3. The State Board shall have the authority to adopt rea-

sonable rules and regulations to carry out the terms of this act.

SECTION 4. Rules and regulations adopted by the State Board shall comply with the terms of Chapter 120 of the Acts of 1945 as the same may be amended.

SECTION 5. An advisory board to the State Board known as the Mobile Home Advisory Board is hereby created.

SECTION 6. The Mobile Home Advisory Board shall be composed of the following:

(1) One member who is actively engaged in the manufacture of mobile homes;

(2) One member who is actively engaged in the operation of a mobile home park;

(3) One member who is a member of a county or city plan commission;

(4) One member who is actively engaged as a mobile home dealer;

(5) One member who is a physician actively engaged in local public health work; and

(6) One member who is a registered engineer employed by the state board, and who shall be appointed by the Health Commissioner as an ex officio member of the board.

SECTION 7. The members of the mobile home advisory board except the ex officio member shall be appointed from a list of four eligible persons for each office recommended by an association or organization representing the greatest number of persons engaged actively in the business in which the person to be appointed is engaged. Thirty days prior to the appointment of a member of the advisory board to be selected from the list recommended by an association or organization, the Health Commissioner shall request of the association or organization a list of nominees. If the list is not provided the Health Commissioner fifteen days after his request, the Health Commissioner may select an eligible person without the recommendation of the association or organization.

SECTION 8. Members of the mobile home advisory board shall be appointed for a three-year term of office. The first advisory board shall be appointed with two of the members for a one-year term, and two members for a two-year term and the remaining members for a three-year term. No member of the advisory board except the ex officio member shall serve more than two terms of office.

SECTION 9. The Health Commissioner shall appoint the members of the advisory board. The Health Commissioner shall designate which members of the advisory board appointed to the first board are appointed for one, two, and three-year terms.

SECTION 10. The mobile home advisory board shall meet upon the call of the chairman. Regulations of the State Board shall not be promul-

gated until they have been considered by the mobile home advisory board, and the recommendations of the advisory board made in a called meeting shall have been filed with the state board or within sixty days after the mobile home advisory board has been provided copies of the proposed regulations. Recommendations of the mobile home advisory board shall be a matter of public interest. The state board in preparing regulations affecting the health, sanitation, and safety in mobile homes and mobile home parks shall not be limited to a recommendation of the advisory board. The Health Commissioner shall call the first advisory board meeting, and preside as chairman of the meeting until the board has elected its chairman.

SECTION 11. A mobile home park shall be in the personal charge of an adult attendant or caretaker designated by the owner or operator of the mobile home park at all times. The caretaker present at the time of a violation of this act shall be equally responsible with the owner or operator of the mobile home park for any violation of this act occurring at the time the caretaker is in charge.

SECTION 12. Sites in mobile home parks which are occupied by mobile homes shall conform to the following requirements:

- (1) Contain at least one thousand square feet;
- (2) Mobile homes shall not be parked closer than ten feet from an adjoining mobile home;
- (3) Mobile homes shall not be parked closer to the lot line of the property upon which a mobile home park is located than the requirements of local zoning ordinances permit or closer to heavily traveled streets or highways than the safety of the park residents and persons using its streets or highways will permit, in all other cases the mobile homes shall not be parked closer than five feet from the lot line of the property adjoining the mobile home park or a street or highway;
- (4) If motor vehicles are parked upon a mobile home site with a mobile home, the motor vehicle shall be parked not closer than three feet from the mobile home upon the site, and not closer than ten feet from other mobile homes in the park; and
- (5) Wheels may be removed from mobile homes in any park only for temporary emergencies.

SECTION 13. A mobile home park must provide a water supply approved by the state board to mobile homes.

SECTION 14. A mobile home park shall dispose of sewage through the use of a public sewerage system if the sewerage system is available within a reasonable distance from the mobile home park. If a public sewerage system is not available, sewage shall be disposed of in a private system, approved by the state board. A water carriage system of disposing sewage shall be used. It shall be the duty of the park operator to require the owner of a mobile home to provide a water and odor-tight connection of a type acceptable to the state board. All occupied mobile homes except dependent mobile homes shall be connected to the sewerage system of the park at all times. All sewer connections not in use must be closed in a

manner which will emit no odor or cause a breeding place for flies. Sewerage system other than water carriage systems shall not be approved for mobile home parks constructed after the passage of this act.

SECTION 15. Suitable garbage containers or a garbage disposal system and trash containers acceptable to the state board shall be made available in an approved manner to every mobile home. The garbage and trash of the park must be disposed of in a manner approved by the state board. Any person who throws and leaves garbage and refuse on the ground shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than twenty-five dollars.

SECTION 16. The community building of a mobile home park shall be constructed in accordance with the electrical, plumbing and other building codes of the state and the municipal units in which the park is located. Construction of the building must be under a plan approved by the state board.

SECTION 17. Toilet facilities shall be provided in a mobile home park for each dependent mobile home in the park as follows: One water closet shall be provided for men, one water closet for women, for each fifteen or fraction thereof of dependent mobile homes in a park, and one individual men's urinal shall be provided for each fifteen dependent mobile homes in a mobile home park. Each water closet shall be contained in a separate compartment which shall have a minimum width of at least thirty-two inches. The water closets shall be provided for men and women in separate sound proof and vision proof rooms. One lavatory shall be provided for each water closet in a community building. The lavatories shall be in the same room but separated from the water closet compartments.

SECTION 18. The following bathing facilities shall be provided for men and women for each fifteen or a fraction thereof of dependent and partially dependent mobile homes:

- (1) One shower or bath tub in a separate compartment;
- (2) A dressing room of not less than two and one-half feet by three feet in size.

SECTION 20. Community buildings providing toilet, lavatory, bathing or laundry facilities must be maintained at a temperature of at least sixty-eight degrees fahrenheit. They must be provided with hot and cold running water. Laundry trays and laundry compartments shall be located separately from toilet rooms and bathrooms. Bathing and toilet facilities shall be provided within three hundred feet of every dependent and partially dependent mobile home.

SECTION 21. One-way streets in mobile home parks shall be a minimum of ten feet in width. Two-way streets shall be a minimum of twenty feet in width. Additional area must be provided for the parking of vehicles. All roads in mobile home parks shall be maintained so as to be dust proof, and walks shall be provided to community buildings separately from the roads of a mobile home park. Each mobile home in a mobile home park shall have ready and free access to the road in a park.

SECTION 22. Domestic animals and house pets shall not be permitted to run at large or commit any nuisance within the limits of a mobile home park.

SECTION 23. Every portion of a mobile home park must be lighted at night in a manner approved by the state board.

SECTION 24. A mobile home park shall not be operated without first obtaining a license from the state board.

SECTION 25. The license to engage in the operation of a mobile home park shall be issued for one year and shall expire at midnight, on December 31 of each year. Any license granted after January 1 of a year shall expire on December 31 of that year.

SECTION 26. Application for a license to operate a mobile home park shall be made to the state board. All forms for application for a license shall be prepared and furnished by the state board.

SECTION 27. The state board may license temporary mobile home parks for a period of six months and waive the requirements of this act if the failure to comply with the act is for a temporary period of time, is required by public convenience and the operation of the park will not jeopardize the health and welfare of the occupants of the park and the community.

SECTION 28. The construction or alteration of an existing mobile home park shall be made only after an application accompanied by plans for the proposed construction or alteration have been forwarded to and approved by the state board.

SECTION 29. The state board shall approve within thirty days after filing any application for the construction or alteration of a mobile home park which complies with the law.

SECTION 30. An annual license fee of seven dollars and fifty cents (\$7.50) shall be charged for each mobile home park plus an additional fifteen dollars (\$15.00) for each fifty mobile home sites or fraction of that number which can be occupied in the park during the year. After the first day of August the fee for a new park for an annual license shall be one-half of the annual fee. Mobile home parks operated by units of local and state government shall not be required to pay the fees required by this act.

SECTION 31. The license of a mobile home park may be revoked by the state board for a violation of this statute or the rules or regulations of the state board.

SECTION 32. The state board shall provide a written notice to a mobile home operator of the revocation of his license, the denial of his application for a license, or the denial of the approval of the construction or alteration of a park. The notice shall contain the following:

(1) The statement of the manner in which the licensee has failed to comply with the law or rules and regulations of the state board; and

(2) The length of time available to correct the violation.

SECTION 33. The state board or any person designated by the state board may at any reasonable time inspect the premises and take necessary and reasonable steps in a mobile home park prior to the granting of an application or after the granting of an application to determine whether or not a mobile home park is in compliance with the law and the rules and regulations of the state board.

SECTION 34. The state board in a hearing upon the revocation of a license or the refusal to grant a license shall comply with the requirements of Chapter 365 of the Acts of the General Assembly of 1947.

SECTION 35. The owner, operator, or caretaker of any mobile home park shall have an innkeeper's lien or hotel keeper's lien upon the property of his guest in the same manner, for the same purposes, and subject to the same restrictions as innkeeper's lien or hotel keeper's lien.

SECTION 36. The owner, operator, or caretaker of any mobile home park may eject any person from the premises for nonpayment of charges or fees for accommodations, for violations of law or disorderly conduct, for violations of any regulations of the state board relating to mobile home parks or for the violation of any rule of the park which is publicly posted within the park.

SECTION 37. Any person maintaining or operating a mobile home park without first obtaining a license or after the revocation of his license shall be guilty of a misdemeanor and upon conviction shall be punished by a fine not exceeding three hundred dollars and/or imprisonment in the county jail not exceeding ninety days.

SECTION 38. Any person who obtains accommodations at a mobile home park with intent to defraud the owner or keeper shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than fifty dollars and/or imprisonment for not more than thirty days.

SECTION 39. Each mobile home park operator shall maintain a register open for inspection of the state board or its duly designated representatives containing the following information in relation to each mobile home in a park:

- (1) The names and ages of all occupants.
- (2) The owner of the mobile home.
- (3) The manufacturer and type of mobile home.
- (4) The dates the mobile home entered and left the park.

SECTION 40. This statute upon passage shall be placed in effect upon the following schedule:

- (1) The statute shall be applicable to the construction of new mobile home parks and the alteration of existing mobile home parks upon passage of this act.

(2) After January 1, 1960, the portions of this statute applicable to mobile home sites shall be applicable to mobile home parks in existence at the time of the passage of this act.

(3) After January 1, 1960, the requirement of water carriage sewerage systems shall apply to mobile home parks in existence at the time of the passage of this act.

(4) The sections of this act not covered in previous sub-sections of this section shall become effective on January 1, 1956. Existing statutes, rules and regulations which may be repealed by this act shall be effective until the effective date of this act.

SECTION 41. No governmental body other than the State Board of Health shall have authority to license or regulate mobile home parks except that county and municipal authorities within their respective jurisdictions shall have jurisdiction regarding zoning and building codes and ordinances pertaining to mobile home parks.

Note: Chapter 79, Acts of 1961 requires, after October 1, 1961, mobile home park licenses be issued on a two-year basis rather than annually. Fees for the two-year period are payable, before issuance of the license, at the rate of fifteen dollars (\$15) for each mobile home park plus an additional thirty dollars (\$30) for each fifty mobile home sites or fraction of that number that can be occupied.

Section 19 deleted by Chapter 93, Acts of 1957

43. Garbage or empty food containers shall not be placed in any incinerator constructed for the disposal of combustible refuse.

Grocery Stores

44. All grocery stores operated as a part of any mobile home park shall conform to the requirements of Regulation HFD 19 of the Indiana State Board of Health.

Restaurants

45. All eating and drinking establishments operated as a part of a mobile home park shall conform to the requirements of Regulation HFD 17 of the State Board of Health.

Swimming Pools

46. All swimming pools operated as a part of a mobile home park shall be constructed and operated in compliance with Regulation H.S.E. 16 of the State Board of Health.

Reporting of Disease

47. Every owner, operator or attendant operating a mobile home park shall notify the local health officer immediately of any suspected communicable or contagious disease within the mobile park homes.

Effective December 15, 1955

34. Sewage flow shall be estimated on the basis of a minimum of one hundred gallons per mobile home lot per day.

35. Sewage treatment or disposal facilities utilizing septic tanks and absorption systems or sand filters shall be constructed in accordance with requirements and recommendations contained in State Board of Health Bulletin S.E.13, as amended, or as approved by the State Board of Health.

36. All sewage treatment facilities which have an effluent discharging into the waters of the state shall be designed, constructed and maintained so that the stream standards enumerated in Regulation S.P.C. 1 of the Indiana Stream Pollution Control Board will be maintained.

Refuse Disposal

37. The mobile home park owner and/or operator shall be responsible for satisfactory storage, collection and disposal of garbage, trash and combustible refuse.

38. Garbage and trash shall be stored in fly-tight water-tight containers which shall be located not more than 150 feet from any mobile home space.

39. There shall be at least one garbage can and one trash can for every two mobile homes. The cans shall be placed on racks with at least 8 inches clearance off the ground or on a concrete base or by other approved construction.

40. Garbage and trash, when not collected by municipally sponsored collection service, shall be collected at least twice a week during the months of June, July, August and September and at least once a week during the other months of the year.

41. The area around the storage cans shall be kept clean and free of litter.

42. Garbage, trash, and combustible refuse shall be disposed of at a public disposal site or in such other manner that it will not create fly breeding, rodent harborage, odor or smoke nuisances or health, fire or safety hazards.

29. Construction and location requirements of the wells, pumps and distribution system not enumerated in previous section of this regulation shall be in accordance with State Board of Health Bulletin S.E. 13, as amended, or as approved by the State Board of Health.

Sewage Disposal

30. All parts of the sewer and sewage disposal or treatment system shall be located to prevent the possibility of contamination of the park water supply or the water supply of surrounding property owners. All components of the sewerage system shall be located at least one hundred feet from any water supply well or pump suction line; however, sewers constructed of extra heavy cast iron pipe may be located within the one hundred foot distance by not closer than thirty feet of a water supply well or a pump suction line when necessary and when approved. Exception: the separation enumerated herein shall not necessarily be considered adequate in areas where fissured stone is encountered.

31. Storm water or surface drainage shall not be discharged to the park sewer system receiving sanitary wastes from mobile homes and service buildings when a private sewage disposal system is used or when the park sewers connect to a public sanitary sewer.

32. All sewers receiving sanitary wastes shall be constructed as required by the Plumbing Rules and Regulations of the Administrative Building Council.

33. Sewers constructed after the adoption of this regulation (H.S.E. 21) shall have manholes constructed at intervals of 400 feet along the sewer and at every change in size, alignment, or grade; or cleanouts the same size as the sewer shall be installed at intervals of 100 feet and at every change in size, alignment, or grade.

25. Water supplies constructed after the adoption of this regulation (H.S.E. 21) shall have all that part of the suction pipe, drop pipe, or delivery pipe not normally under constant pressure and located within ten feet of the ground surface surrounded by a water-tight casing pipe extended at least 12 inches above the ground.

26. Each mobile home lot, except those used specifically for dependent mobile homes, shall be provided with a cold water tap extending at least 4 inches above the ground surface. The outlet shall be protected from freezing by the use of a heater tape, insulation, or draining when not in use. In no case shall a stop and waste valve or other devices which would allow aspiration of backflow of contaminated water into the potable water system be used.

27. Water distribution lines and sewers shall not be placed in the same trench after the adoption of the regulation (H.S.E. 21) but shall be separated not less than 10 feet horizontally, except a water line may be placed in the same trench with a sewer line provided it is laid on a shelf of undisturbed earth and the bottom of the water line is, at all points, at least 18 inches above the top of the sewer. The water and sewer connection on each lot shall be separated not less than 5 feet horizontally.

28. Wells and water distribution systems shall be disinfected after constructed or repaired and the bacteriological quality of the water shall be in conformance with Regulation H.S.E. 3 of the Indiana State Board of Health.

REGULATION HSE 21

MOBILE HOME PARKS

Authority

Chapter 321, Acts of 1955, Section 3, authorizes the State Board of Health of Indiana to adopt reasonable rules and regulations, to carry out the terms of the act.

Definitions.

1. The definitions as outlined in chapter 321, Acts of 1955 Section 2, are hereby adopted by reference as part of this regulation.

Mobile Home Park Sites

2. Mobile home parks shall be located on well drained sites and in areas free of open dumps or other conditions which will cause or contribute to a health hazard.

Mobile Home Lots

3. The mobile home park shall be divided into lots with permanent markers indicating the corners of each lot, or an accurate plat shall be available indicating the size and location of each lot.

4. An occupied mobile home shall not be allowed to remain in a mobile home park unless parked on lot with appropriate utility services.

Streets

5. There shall be no dead end streets for vehicle traffic in a mobile home park. An adequate turn-around will serve to eliminate a dead end.

Parking Facilities

6. At least one auto parking space for each mobile home lot shall be provided within the property lines of the park.

7. Auto parking space may be included on the mobile home lot, on the park street, or on separate parking lots. If separate parking lots are used, each parking space shall be located within 300 feet, measured along the line of travel, of the mobile home lot it will serve.

Park Lighting

8. The streets and walks of a mobile home park shall be adequately lighted.

9. Minimum lighting shall be equal to one sixty watt bulb located at intervals of 100 feet along the streets and walks and hung at a height of 15 feet above the street or walk with such additional lights as might be required because of natural or artificial obstructions.

Community Building

10. Community buildings shall have impervious floors such as concrete sloped to floor drains to prevent standing water.

11. All exterior openings shall be covered with 16 mesh screen or equivalent during periods of the year when insects are prevalent.

12. Toilet and laundry rooms shall be constructed so that they can be well lighted at all times. The laundry rooms shall have illumination of at least 40 foot candles on work areas such as washtubs, ironingboards, and sorting tables. The toilet rooms shall have illumination of 40 foot candles in front of mirrors.

13. Sufficient hot water heating facilities shall be available so that the temperature of the hot water is maintained at a minimum of 120° F. at all times.

14. At least one water closet and lavatory shall be provided in community buildings.

15. In a mobile home park accommodating dependent mobile homes, there shall be facilities for emptying and cleaning night soil containers.

16. Laundry trays shall be connected to the sanitary sewer. An automatic washer, whether or not a charge is made for its use, is considered equivalent to a laundry tray.

17. Community buildings shall be located at least 15 feet from any mobile home.

18. Community buildings shall be maintained in a clean and sanitary condition at all times.

Water Supply

19. An accessible, adequate, safe and potable supply of water shall be provided in each mobile home park, capable of furnishing a minimum of 125 gallons per day per mobile home lot.

20. Where a public water supply is available, a connection shall be made thereto and its water used exclusively.

21. Water supply wells shall be located in an area not subject to flooding.

22. The minimum distances between wells and buried pump suction lines and from sources of contamination shall be in accordance with the following:

Sewers and drains.....	100 feet
Cast Iron Sewers and drains having leaded or mechanical joints	30 feet
Septic tanks, absorption fields, sand filters	100 feet
Privies.....	100 feet
Streams, lakes, ponds, ditches.....	50 feet
Property lines.....	25 feet

23. The water supply and distribution system shall be sized and constructed to deliver water at 20 pounds per square inch minimum pressure to all mobile homes during periods of peak water demands.

24. Water supplies constructed after the adoption of this regulation (H.S.E. 21) shall have no well head, well casing pump, pumping machinery, valve connected with the suction pump, or exposed suction pipe located in any pit, room, or space extending below ground level; or in any room or space above the ground which is walled in or otherwise enclosed so that it does not have free drainage to the surface of the ground.

PLANNING GUIDE
for
**PRIVATE WATER SUPPLY AND
SEWAGE DISPOSAL**
for
**SMALL PUBLIC, COMMERCIAL AND
PLACE OF EMPLOYMENT BUILDINGS**
— Minimum Requirements —

BULLETIN S.E. 13
1962

INDIANA STATE BOARD OF HEALTH
1330 WEST MICHIGAN ST.
INDIANAPOLIS 7, INDIANA

PLANNING GUIDE
for
PRIVATE WATER SUPPLY AND SEWAGE DISPOSAL
for
SMALL PUBLIC, COMMERCIAL AND PLACE OF
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(Minimum Requirements)

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INDIANA STATE BOARD OF HEALTH
1330 West Michigan Street
Indianapolis 7, Indiana

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Section 100. GENERAL CONDITIONS AND SCOPE

The purpose of this bulletin is to guide architects and engineers in *some minimum requirements* for layout and design of private water supply and sanitary sewage disposal systems for small public, commercial and place of employment buildings, at locations where such private facilities may be approvable.

However, a connection to an approved public water supply and public sewer system is a primary building requirement.

Wherever private water or sewage treatment may be contemplated for use, adequate engineering preliminary investigations shall be made to determine if private water or sewage treatment facilities may be approvable for the use intended and at the location contemplated.

Some locations and uses may not be approved due to such reasons as: (1) inadequate area for facilities, (2) inadequate or non-potable ground water supplies, (3) tight or wet soils, (4) areas subject to flooding, (5) inadequate dilution water for final effluent, (6) proximity of heavily inhabited or built-up areas, (7) watershed sanitation considerations, (8) availability of municipal or public facilities, (9) or other health and sanitation considerations.

It is not intended to provide fully detailed construction drawings in this bulletin and the information herein should be considered only as a *minimum planning guide*. Each proposed facility will be considered separately.

The sewage treatment devices outlined in Sections 503 through 508 are minimal and generally should only be considered for some small waste flows involving human excrement, human bathing and handwashing waste and limited food service waste. See Sections 400 through 406.

It should be particularly noted that proposed new private water supply and sewage treatment facilities should be located so that future expansion or addition to a building can be done without jeopardizing the use of the existing systems or making it necessary to relocate them.

Also, an existing private water or sewage treatment facility shall be suitably expanded or revised to provide for any proposed building addition. Separate, scattered systems for each expansion of a building will not be permitted.

No condition shall be created or maintained which may result in or cause a potential health or safety hazard.

Section 101. PREPARATION, SUBMITTAL AND APPROVAL OF PLANS AND SPECIFICATIONS

Complete, detailed working plans and specifications for water supply and sewage disposal facilities, or changes to existing facilities

ties, shall be submitted where required to the State Board of Health for review and possible approval, including facilities for building projects such as commercial buildings, institutions, hospitals, nursing homes, motels, organization camps, restaurants, food and drink processing plants, industrial plants, places of public assembly, schools, publicly owned or financed buildings, etc.

Plans and specifications submitted to the State Board of Health for review shall have approval obtained in writing prior to releasing the plans and specifications to bidders or beginning construction.

Plans and specifications submitted to the State Board of Health shall be prepared and/or certified by an architect or engineer currently licensed to practice in Indiana. One copy of any plans and specifications, and revisions thereto, approved by the State Board of Health will be retained and filed by the Board.

Permits for zoning, building construction, and installation of private water supply and sewage disposal facilities are required locally by several cities, towns and counties and such permits must be obtained at least prior to bidding or construction.

Section 102. SOME ITEMS TO BE INCLUDED ON PLANS

The following items are representative of some of the location and construction information to be supplied on plans and specifications:-

1. Topography, property lines, streets, drives, roads, buildings and any adjoining lakes, streams or ditches.
2. Location of any water supply sources or structures, water lines, sewers, sewage treatment facilities, etc., for at least 200 feet outside the project property boundary lines.
3. Location and identification of any housing, buildings or other occupied structures, or land uses, such as parks, camps, playgrounds, etc., within at least 1,000 feet outside the project property boundary lines.
4. Details and results of water well test drilling, chemical analysis and potability as necessary.
5. Location and details of *existing and proposed* water supply sources and *underground lines* in regard to all possible sources of contamination.
6. Details of well construction, including method of sealing the casing top and height above grade and flood level at which casing will be terminated.
7. Details of sealing and grouting the well casing.
8. Details of housing the pumping equipment.
9. Details of the pumping equipment including controls, pump capacity and type.
10. Details of the water storage tank or the combination water storage-pressure tank.

11. Provisions for well logs and yield testing.
12. Details of water piping materials, sizes, location and installation.
13. Details of water main construction.
14. Location and details of any type of proposed water treatment.
15. Provisions for disinfection of the water supply system and bacteriological analysis of the water prior to occupant use of the supply.
16. Location and details of existing sewers and proposed sewers, including materials, jointing, infiltration limits, bedding, slopes and elevations.
17. Location and details of manholes, lift stations, etc.
18. Location and details of existing and proposed sewage treatment structures and processes.
19. Location and description of discharge point of outfall sewer from sewage treatment including:
 - a. Description and use (existing and probable) of land areas adjacent to outfall discharge points.
 - b. Description and location of discharge point of final effluent.
 - c. Description, name, location and low water flow estimates of the all-weather receiving water course.
20. If an underground absorption field is proposed, submit percolation test results and maximum ground water elevations, in addition to construction details of the field. (Note: The possibilities of use of underground absorption fields are limited).
21. Details of plumbing systems in compliance with Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.
22. Details of general construction, heating, ventilating, air conditioning and electrical work in compliance with the regulations of the Administrative Building Council, insofar as applicable.
23. Zoning permit information.

NOTE: Some building uses such as hospitals, nursing homes, motels and mobile home parks must comply with licensing requirements of the State Board of Health.

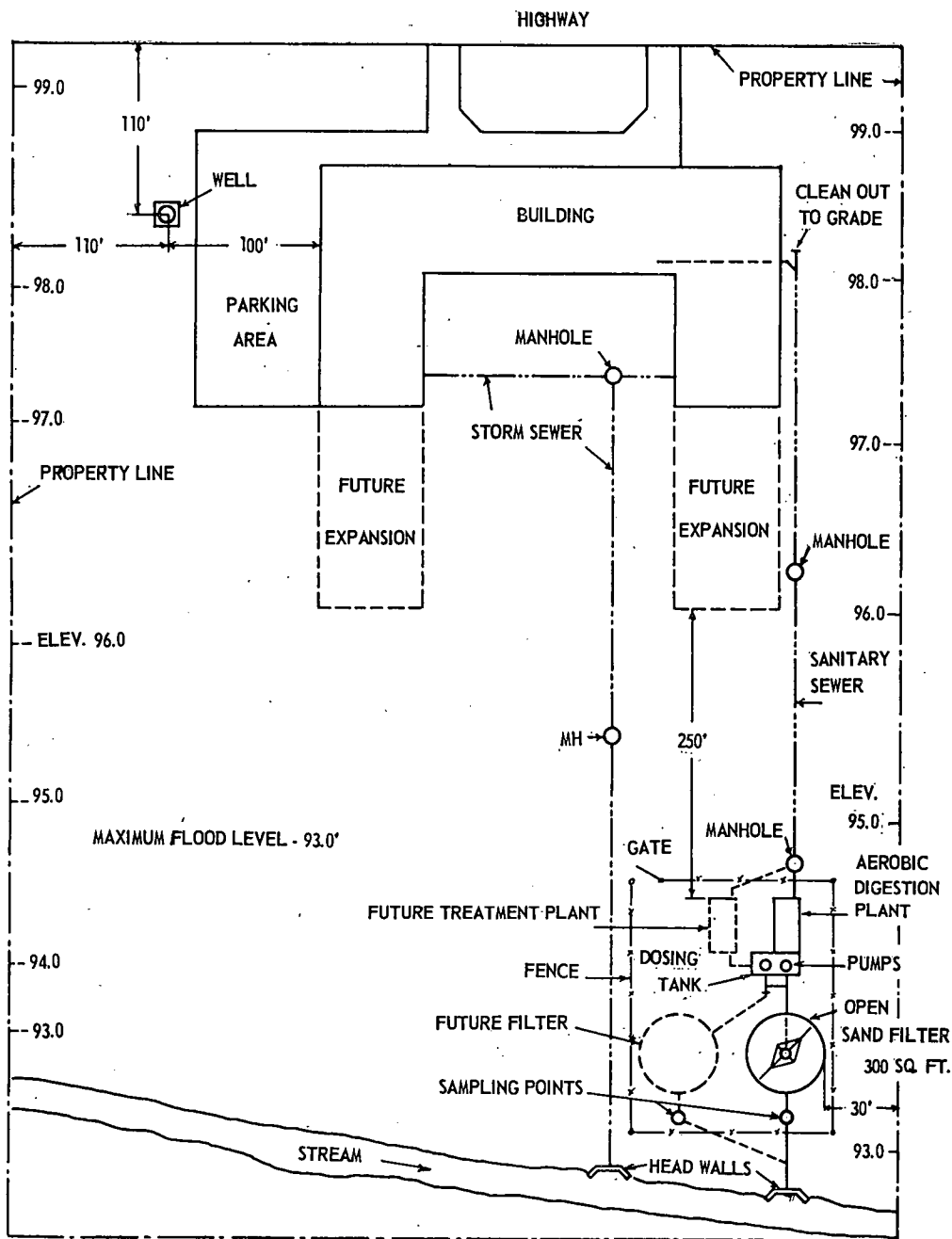


FIGURE 1—LAYOUT OF A WATER WELL AND SMALL SEWAGE TREATMENT FACILITY
Schematic—No Scale

WATER SUPPLY

Section 200. GENERAL REQUIREMENT

Connection to and use of an approved public water supply are basic and primary requirements. However, private wells may be proposed for a water supply source where such private facilities may be approvable.

Section 201. LOCATION OF WELLS

Water wells shall be located a safe distance from all existing and potential sources of contamination. See Table I for minimum allowable separation distances between wells and sources of contamination.

In fissured or creviced water bearing rock formations, greater separation distances than in Table I and other precautions may be necessary to minimize possibilities of water contamination.

Wells shall be located *outside* the foundation walls of buildings. Wells should be located so that the natural topography will provide surface drainage away from the wells. Wells should be located at elevations high enough to prevent any drainage toward them from sewers or sewage treatment facilities or other sources of contamination. Also, wells should be located where flooding does not occur.

It should be particularly noted that private water supply and sewage treatment facilities should be located so that future expansion or addition to a building can be done without jeopardizing the use of the existing systems or making it necessary to relocate them.

Also an existing private water or sewage treatment facility shall be suitably expanded or revised to provide for any proposed building addition. *Separate, scattered systems for each expansion of a building will not be permitted.*

Section 202. CAPACITY OF WELLS

The capacity of the well as indicated by test pumping or yield testing shall be adequate to supply the daily and peak load requirements. Where this is not possible, the water supply system design shall be adequate for daily and peak load requirements. This may involve storage as well as other considerations.

See Table III, page 17, for estimating daily water requirements for drinking and sanitary purposes.

Table I

SOME MINIMUM SEPARATION DISTANCES FOR PRIVATE WATER SUPPLY AND SEWAGE FACILITIES

	Separation in Feet			
	Water Well	Outside of Buildings	Property Lines	Lake or Stream
Buried Sewers and Drains (1) (2)	100 Ft.	10 Ft.	10 Ft.	
Septic Tank	100 Ft.	10 Ft.	10 Ft.	25 Ft.
Aerobic Digestion Plant (2) (3) (4)	100 Ft.	250 Ft.	25 Ft.	25 Ft.
		Desirable		
Open Sand Filter: (2) (3) (4)				
(a) Preceded by Primary Treatment	100 Ft.	250 Ft.	25 Ft.	25 Ft.
		Desirable		
(b) Preceded by Secondary Treatment	100 Ft.	250 Ft.	25 Ft.	25 Ft.
		Desirable		
Buried Sand Filter (2) (3) (4)	100 Ft.	50 Ft.	25 Ft.	25 Ft.
Absorption Field (2) (3) (4)	100 Ft.	50 Ft.	25 Ft.	25 Ft.
		Desirable		
Water Well (4)		Outside Foundation Walls	100 Ft. Desirable	25-100 Ft.

- (1) If it is necessary to locate buried sewers or drains closer than 100 feet to a well or pump suction line, extra heavy cast iron soil pipe with caulked and leaded joints shall be used. Extra heavy cast iron sewers and drains shall not be constructed closer than 30 feet to water sources.
- (2) No sewage treatment facility or buried sewer or drain shall be closer than 200 feet to a public or municipal water supply well. In fissured or creviced water bearing rock formations, greater separation distances and other precautions may be necessary to minimize possibilities of water contamination.
- (3) Open sewage filters and other open sewage treatment devices should be located down-wind from buildings with respect to prevailing wind direction. *Additional precautions and increased property line and building separation distances may be required in built-up areas and areas that are potential for build-up.* Sewage treatment devices shall not be located under parking areas, drives, walks, or similar, nor in playground, picnic, assembly or other similar areas.
- (4) Sewage treatment devices and water wells should not be located where flooding may occur. Wells should be located at elevations high enough to prevent any drainage toward them from sewers or sewage treatment facilities or other sources of contamination.

Section 203. PEAK WATER DEMANDS

Peak and instantaneous water demands are often difficult to estimate accurately. For general design purposes, for the establishments listed in Table III, peak water demands for drinking and sanitary purposes may be reasonably estimated at approximately $1/3$ the total daily water requirement over a one-hour period. Table III does not include fire protection water requirements. Also the water supply system shall be designed so that a minimum pressure of not less than 20 pounds per square inch is maintained under all conditions of use.

Section 204. CONSTRUCTION OF WELLS

Drilled and cased wells should be used. The drilling and the casing of the well shall be done in such a way to exclude all surface water and seepage along the outside of the casing into the water-bearing stratum. The well water supply should be obtained from a depth of not less than 20 feet, and from a water-bearing stratum not likely to be contaminated.

The well casing shall be new wrought iron or steel pipe with welded or threaded joints. The casing shall extend to a height of at least 1 foot above finished grade and at least 2 feet above maximum flood level. Where a rock formation contains or overlays the water-bearing stratum, the casing shall be terminated and adequately sealed into the rock with cement grout in accordance with "The American Water Works Association Standards for Deep Wells."

In a sand or gravel or other unconsolidated water-bearing strata, a well screen shall be attached to the bottom of the casing.

Some details of typical well construction are shown in Figures 2 and 3.

Also, where water pressures may exceed 100 pounds per square inch, a pressure reducing valve should be properly installed.

Section 205. SEALING THE TOP OF THE WELL CASING

The top of the well casing shall be adequately sealed to prevent the entrance of contaminants. This may usually be done with a sanitary well casing seal or by use of an approved pitless type well adapter. (See Section 208 for Submersible Pumps.)

However, if a deep well turbine pump is used, the casing should extend up as far as possible into a one-piece pump casting.

Section 206. HOUSING THE PUMP

The pump shall be housed at the well and above grade in an enclosure which provides protection from freezing and has necessary ventilation. (See Section 208 for Submersible Pumps.)

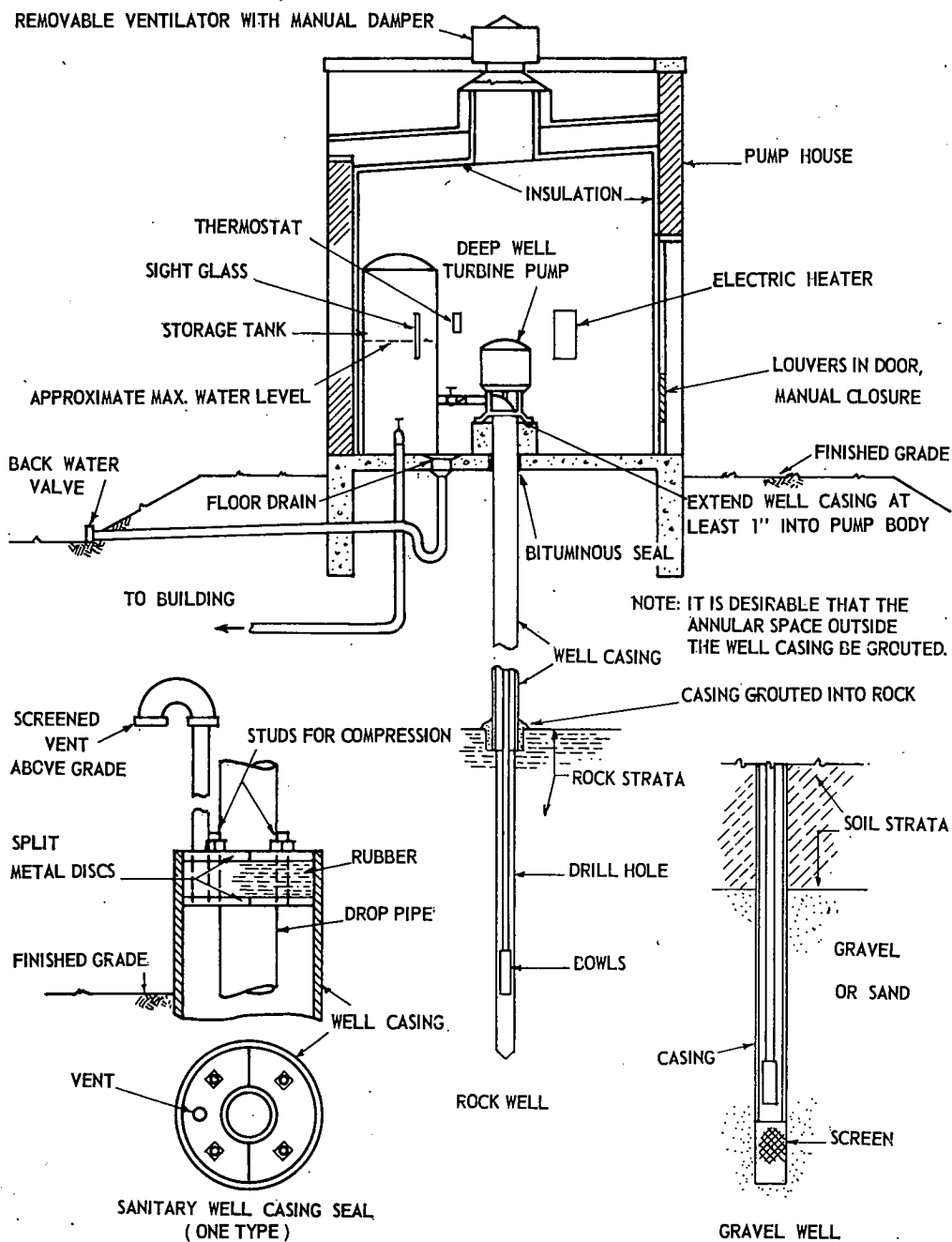


FIGURE 2—PUMP HOUSE AND WELLS
Schematic—No Scale

The floor of the structure shall be concrete and shall be drained by gravity to the ground surface. The well casing shall be sealed at the pump house floor with bituminous material or similar. A detail of one type of pump house is shown in Figure 2.

Section 207. SELECTION OF THE PUMP

Selection of the pump must be correlated with the design conditions for the water supply and distribution system.

For example, where a well has sufficient capacity and other conditions are favorable, so that only a pressure tank need be used, the pump should then have sufficient capacity to deliver the daily water requirements as well as peak demands.

Where water storage is provided, such as elevated storage or by a combination of pressure and storage tanks, then the pump should be selected and sized accordingly.

In any event, the water supply and distribution system should be designed to provide maximum daily water requirements and peak demands at adequate pressures at each point of water use. The water supply system shall also be designed so that not less than 20 pounds per square inch pressure can be maintained under all conditions of use.

Section 208. LOCATION OF PUMP, SNIFFER AND CHECK VALVES

Pumps shall be located at wells.

Where a submersible type pump is used, an approved pitless type well adapter shall be used. The pitless adapter shall extend at least 1 foot above finished grade and 2 feet above maximum flood level and be adequately protected.

The snifter valve and all check valves for submersible type pump installations shall be located inside the well casing.

EXCEPTION: Under special circumstances and conditions, such as where very low water demands occur and occupancy or use is minimal, etc., it may be permitted to offset some types of pumps from a well. However, if this type of installation is permitted, all suction lines shall be permanently and completely encased watertight and airtight and the offset should not exceed 10 feet. The return line of a shallow or deep well jet pump is a suction line.

(See Figure 3, Page 10.)

Section 209. STORAGE AND PRESSURE TANKS AND CONTROLS

Pumps shall discharge into an adequate pressure tank or combinations of pressure and storage tanks. Such tanks shall be located near the pump and pressure tanks shall not be buried unless specifically designed for such operation and constructed of materials and adequately coated to prevent deterioration.

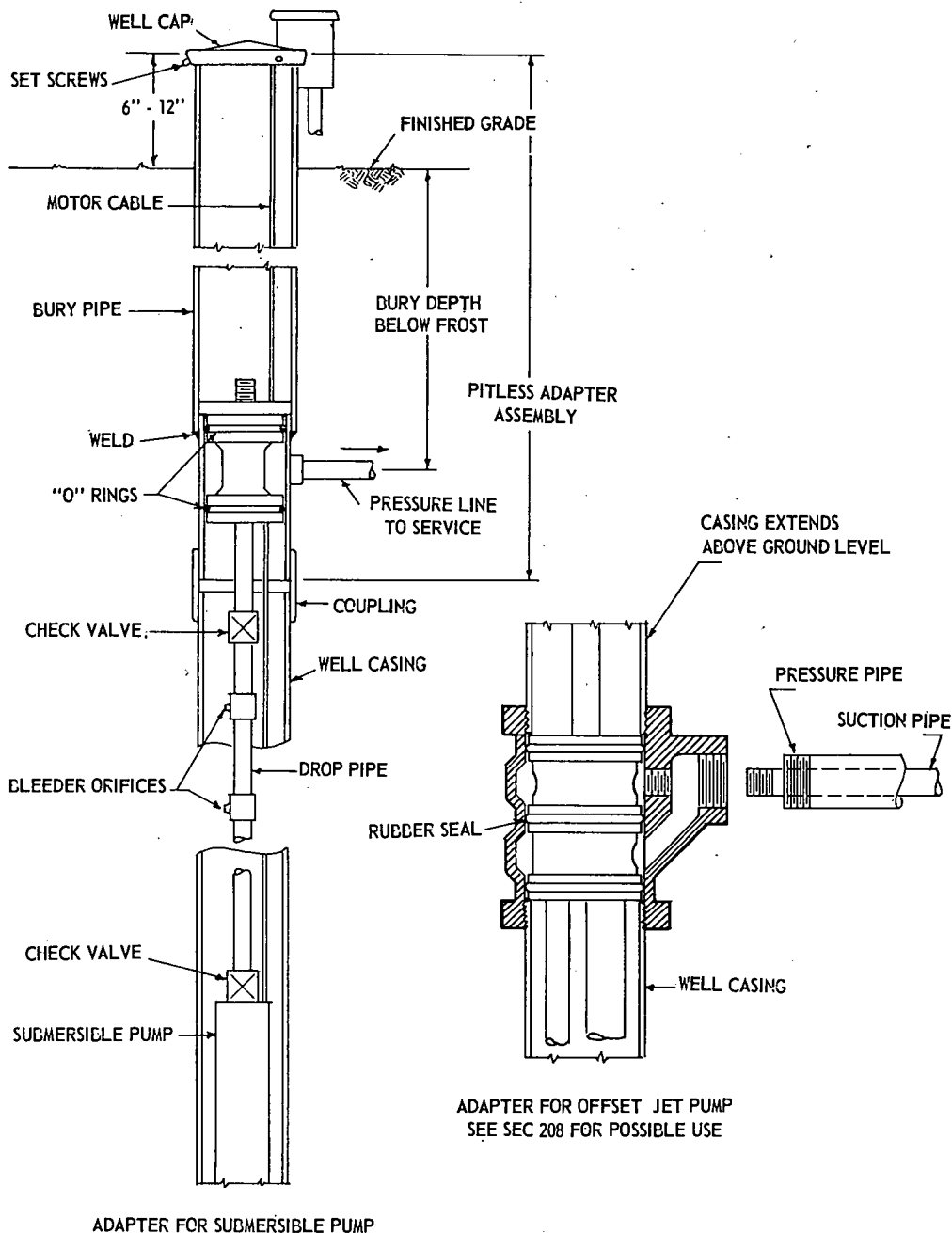


FIGURE 3—PITLESS WELL ADAPTER
Schematic—No Scale

If elevated storage is used, some types of pumps may be selected which can pump directly to the elevated storage, provided they are properly controlled, without use of a pressure tank.

In sizing a pressure tank or a combination pressure-storage tank, the tank air cushion should be calculated at 50 to 60 percent of the tank volume at the pump shut-off pressure. Then, the only water available for storage should generally be considered as the volume of water between the pump shut-off pressure and the pump starting pressure.

With a pressure tank or a combination pressure-storage tank installation, the tank water storage volume and the controls shall be adequate to prevent excessive on-off cycling of the pump and excessive pump running time.

The pumping system shall be automatically controlled to maintain adequate working pressures and water and air volume in pressurized tanks.

The system shall be designed to provide maximum daily water requirements and peak demands with adequate pressure and volume at each point of water use. System pressures under all conditions of use shall not be less than 20 pounds per square inch.

Pressure or compression tanks in a water supply system that may be subjected to excessive pressure shall have an approved type pressure relief valve installed and set to safely relieve the vessel below the safe working pressure of the system.

Where water supply system pressure may exceed 100 pounds per square inch a pressure reducing valve should be installed.

Section 210. DISINFECTION OF THE WATER SUPPLY SYSTEM AND BACTERIOLOGICAL TESTS

Before the water supply system is approved for use, it shall be adequately disinfected and satisfactory bacteriological tests obtained of the water. Disinfection should be carried out under the supervision of the architect or engineer. Sterile bottles for water samples and bacteriological tests may be obtained from private laboratories or the Indiana State Board of Health, 1330 West Michigan Street, Indianapolis, Indiana. A charge will be made for each test made by the State Board of Health Laboratories.

Section 211. CHLORINATION AND OTHER WATER TREATMENT

In some instances, mechanical chlorination, iron removal or other treatment of the water supply may be necessary. In such instances, adequate details shall be furnished as a part of the water supply system plans and specifications. This requirement does not normally include boiler feed water treatment.

Section 212. WATER PIPING

The water supply and distribution system piping, materials and jointing shall conform to the requirements of Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

In buildings where an unsafe, non-potable water distribution system is installed or used, all such unsafe, non-potable water piping shall be completely separate from any other water piping and all such unsafe, non-potable water piping shall be durably color coded with a distinctive yellow paint and plainly labeled at not more than 10 feet pipe intervals with permanent type labels, "NON-POTABLE WATER."

All potable water supply systems shall be designed, installed and maintained to prevent contamination and introduction of toxic materials. There shall be *no* cross connections, either existing or potential.

Section 213. TRENCHING

Water piping shall be adequately protected from freezing and buried water lines shall be laid below prevailing frost penetration. Water lines and sewers shall not be laid in the same trench. A horizontal separation of 10 feet shall be maintained unless special construction is provided as in Article X of Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

It is necessary that crossing of buried sewer lines and buried water lines be avoided.

BUILDING SEWERS

Section 300. GENERAL REQUIREMENT

Connection to and use of an approved public sewer system are basic and primary requirements. However, private sewage treatment may be proposed for sewage disposal where such private facilities may be approvable.

Section 301. LOCATION OF SEWERS

The location of all sewer lines shall at least conform to the minimum separation distances in Table I. A buried sewer located closer than 100 feet to a water supply well or pump suction line shall be constructed of extra heavy cast iron soil pipe with leaded and caulked joints. No buried sewer or drain shall be closer than 30 feet to a well or pump suction line. (See Section 213.)

Section 302. CONSTRUCTION OF SEWERS

Sewers and water lines shall not be laid in the same trench. A horizontal separation of not less than 10 feet shall be maintained unless special construction is provided as in Article X of Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

Sewers and water lines shall be adequately protected from freezing and buried water lines shall be laid below frost penetration depths.

Except as otherwise required in Sections 301 and 302 herein, buried sewers beginning 3 feet outside the foundation walls of buildings may be constructed of vitrified clay, concrete, or asbestos-cement sewer pipe with approved tight joints, or other sewer materials as may be permitted under Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

Sewers shall be laid to a uniform grade to provide velocities of not less than 2 feet per second. Adequate sewer bedding and protection shall be provided. All buried sewers shall be laid deep enough to prevent freezing.

Sewers proposed under driveways, parking slabs, or other heavily loaded areas, shall be adequately constructed to prevent damage or breaking.

Manholes shall be constructed in sewer lines as may be necessary or required.

Section 303. SIZE OF SEWERS

No outside building sewer shall be less than 4 inches in diameter. Minimum sewer diameters will vary upward from 4 inches, according to use. Sewers shall be adequately sized to carry total daily flows as well as necessary allowance for intermittent peak flows. Soil, waste, vent and drain piping inside the building shall comply with Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

TABLE II
MINIMUM SLOPES OF SEWERS

<i>Sewer Size</i>	<i>Minimum Slope in Feet per 100 Feet</i>
6-inch diameter	0.80
8-inch diameter	0.40
10-inch diameter	0.28
12-inch diameter	0.22
15-inch diameter	0.15
16-inch diameter	0.14
18-inch diameter	0.12
21-inch diameter	0.10
24-inch diameter	0.08

Section 304. SEPARATE STORM WATER AND SANITARY SEWERS REQUIRED

Storm water run-off, footing drains, roof drains, downspouts, cooling water, etc., shall not be discharged to a private sewage or waste treatment system. Separate storm water drains and sewers shall be provided in accordance with Volume III, the Plumbing Rules and Regulations of the Administrative Building Council.

SEWAGE TREATMENT SELECTION AND LOCATION

Section 400. GENERAL REQUIREMENT

Connection to and use of an approved public sewer system are basic and primary requirements. However, private sewage treatment may be proposed for sewage disposal where such private facilities may be approvable.

Section 401. SELECTION OF PRIVATE SEWAGE TREATMENT

The type and degree of sewage treatment required will vary. For example, the type and the design of a sewage treatment facility for a restaurant operating 18 to 24 hours a day, or a commercial laundry, or a commercial dairy plant in most cases needs to be considerably different than a facility for treating only human excrement from a small building that may be occupied 8 hours a day for 5 days weekly.

It is not practical to give specific standards to be used in selecting the most suitable treatment units, or combination of units, for a particular installation. This can only be done by careful consideration of each proposed project. For example, if a sewage treatment facility is contemplated for discharge of final effluent to a stream, certainly it should first at least be determined if there is an accessible stream having adequate dilution water for the type and degree of treatment contemplated.

Listed below are some generalized selection and design factors as follows:

1. Quantity and rates of sewage flow.
2. Area available for location of treatment systems.
3. Watershed restrictions.
4. Dilution water available in stream.
5. Outfall conditions.
6. Topography in relation to access and gravity flow.
7. Ground water levels and flood or high water levels.
8. Plant operation and maintenance.
9. Surrounding land development and use.
10. Sewage composition and strength.
11. Projected future expansion needs.

Section 402. MAINTENANCE AND OPERATION

It is an indisputable fact that practically any building, structure, device, process, equipment or machine must have adequate maintenance and proper operation if it is to provide the function or service intended.

Certainly private water supply and sewage treatment facilities are not exceptions.

Varying degrees of maintenance and operation will be needed for private sewage treatment facilities, depending generally upon their type, complexity and loading.

Septic tanks need periodic scum and sludge removal. Open sand filters need periodic raking, weed and grass removal, and top layer sand removal and replacement. Grease and oil separators must be periodically cleaned and the greases and oils incinerated or otherwise disposed of by sanitary methods. Rotary distributors will require periodic cleaning and flushing of the ports. Sewage pumps, screens, etc. must have attention.

Water supply systems including pumps, pressure and storage tanks and controls, etc. must also receive periodic inspection and maintenance.

Listed below are a few suggestions that the designing engineer, the vendor and the contractor should consider in this regard:

1. At the completion of the job, explain to the owner and the maintenance supervisor the limitations of the system and outline check points and needs for routine maintenance and inspection.
2. Provide the owner and the maintenance supervisor with adequate written operating and maintenance instructions and a schematic diagram of the system showing all controls, valves, pumps, units, devices, etc.
3. In design, give consideration to providing adequate warning or alarm systems, etc., from vital points of possible failure or inoperation in the system. Such alarm or warning systems should be carefully designed and installed tamper-proof so that they cannot be disconnected or by-passed. For example, a grease or oil separator, if allowed to by-pass or overflow through a lack of cleaning, may cause a part of a sewage treatment system to become inoperative.
4. Also in design, adequate space for access, operation and maintenance should be provided. For example, if valves are located so that access is not easy, this defeats operation. On the other hand, if equipment that needs periodic servicing, maintenance or inspection is placed in enclosed spaces too small to permit access, this again hinders operation and maintenance.

Section 403. GREASES, OILS, ACIDS, ALKALIS AND OTHER DELETERIOUS SUBSTANCES

No substance of a quantity or type deleterious to the sewage treatment process shall be discharged directly into the sewage treatment facility. Such substances shall be adequately pre-treated, or separately treated and disposed of, or necessary additional treatment provided.

It should not be assumed that the sewage treatment devices outlined in Sections 503 through 508 are adequate for all types of sewage and waste treatment.

For example, at an animal laboratory where the waste may contain quantities of hair, flesh and other organics, it is not generally possible to adequately treat such waste by methods outlined in Sections 503 through 508. At a large restaurant operating 7 days a week, it is not likely that these methods will successfully handle the greases, oils and garbage. Further, at a commercial laundry, the treatment processes as outlined in Sections 503 through 508 may not be expected to handle this type of waste. The lint, soaps, scale, detergents, etc., involved present quite a different treatment problem.

Section 404. GARBAGE DISPOSAL

Limited amounts of ground or shredded garbage may be discharged to the building sewer for treatment and disposal through a private sewage treatment facility. However, where a major portion of the organic loading on the facility would be ground garbage, such as from a produce department of a super market, restaurant or similar, other methods of garbage disposal are necessary.

Where limited amounts of ground garbage are disposed of through a private sewage treatment facility, or when this is anticipated, necessary provisions for this load should be made in the design of the treatment facilities. Some general provisions where limited amounts of ground garbage are to be disposed of will include: (1) Increased detention and sludge storage capacity; (2) Increased treatment capacity.

Section 405. INDUSTRIAL AND PROCESSING WASTE TREATMENT

It is necessary that the Industrial Waste Section of the Division of Sanitary Engineering of the State Board of Health be consulted for recommendations prior to design or installation of any industrial or processing waste treatment facilities.

Industrial and processing wastes require more specialized design considerations and treatment than outlined in this bulletin. However, in some small intermittent food, meat or milk processing operations, some of the sewage treatment methods outlined in Sections 503 through 508 may be feasible. Generally this should be confined to establishments having estimated maximum daily waste flows of not more than 10,000 gallons per day.

Flow estimates for poultry killing and processing may range from 5 to 10 gallons per bird; for swine, 100 to 150 gallons per hog; for cattle, 300 to 400 gallons per beef; and milk processing plants from 150 to 250 gallons of waste per 1,000 pounds of milk handled.

Section 406. LOCATION REQUIREMENTS

It is essential that safe distances be maintained between water supplies and sewage treatment facilities. (See Table I.)

SOME SEWAGE TREATMENT DEVICES

Section 500. EXPLANATION OF PRIMARY, SECONDARY AND SOME OTHER SEWAGE TREATMENT

Generally speaking, private sewage treatment within the scope of this bulletin may roughly be divided into four groups:

1. Primary treatment which is sedimentation or settling out of a limited portion of suspended sewage solids.
2. Secondary treatment which involves the removal of a high percentage of suspended, colloidal and dissolved organic matter.
3. Sand filters following either primary or secondary treatment.
4. Underground absorption fields following septic tanks for small sewage flows where soil and ground water conditions are favorable.

Within the intended scope of this bulletin, it may be reasonably expected that the minimal private sewage treatment required will be primary treatment followed by an absorption field or sand filter and, in many instances, secondary treatment followed by sand filtration.

Section 501. SOME SEWAGE TREATMENT DEVICES

It should be restated that the basic sewage treatment devices outlined in Sections 503 through 508 do not provide adequate treatment for many sewage and waste problems.

There are several types, devices and methods of sewage treatment which may be proposed as a part of private sewage treatment. Some of these include mechanical package type treatment, trickling filters, waste stabilization ponds, screens, sludge drying and storage, secondary settling tanks, aeration and aerobic digestion, coagulation and precipitation, separators, comminutors, etc.

Most of these types, devices and methods of treatment, and others, require a specialized engineering design approach.

It should be pointed out, however, that waste stabilization ponds are generally only feasible for some municipal or similar uses.

Section 502. AEROBIC DIGESTION SEWAGE TREATMENT

Aerobic digestion plants providing 24-hour aeration for sewage of average strength have been successfully utilized for treatment of sewage and organic wastes from schools, subdivisions, mobile home parks and similar occupancies.

The considerations for location of these plants should be similar to that of other exposed sewage treatment facilities. The plant must be securely fenced for safety considerations and to avoid vandalism.

The effluent from these plants may receive the same consideration as that from other treatment facilities. Therefore, the

requirement of sand filters and/or chlorination will generally depend upon the dilution water available and downstream water uses.

The design of such treatment facilities must be adapted to the specific installation; however, the following general approach should be considered:

1. Comminuting equipment should be provided. Garbage grinders in food service establishments will increase the organic loading which must be given special consideration.

2. The aeration tank is normally designed for a 24-hour detention for average strength sewage (0.17 pounds of B.O.D. per capita per day). Duplicate units are desirable to permit flexible operation.

Duplicate blower or compressor units should be provided. If mechanical aeration facilities are utilized, a separate aeration mechanism should be provided. The air supply should provide at least 2,000 cubic feet of air per pound of B.O.D. applied, at least 3 cubic feet of air per minute per foot of tank length, and be adequate to maintain aerobic conditions throughout the plant.

- All aeration tanks utilizing diffused air should be equipped with easily removable diffuser headers to permit inspection and service without dewatering the tank. Shut-off valves must be provided on each air header.

3. The final settling tank should provide at least 4 hours detention based upon the average daily flow exclusive of the sludge hopper. Surface settling rates should not exceed 600 gallons per square foot per day and weir overflow rates should not exceed 5,000 gallons per day per lineal foot of weir. Positive sludge return to the aeration tank must be provided.

4. Sludge holding tanks may be required.

5. The plant must receive discharge only from properly designed and constructed sanitary sewers. Roof and foundation drains, cooling water and storm runoff must be excluded.

Section 503. SEPTIC TANKS

A septic tank provides only partial sewage treatment. A large part of the outflow from a septic tank is raw or inadequately treated sewage.

Where used, septic tanks shall at least be provided with sand filtration or underground absorption fields as may be required or feasible. See Section 508 for some limitations of use of absorption fields.

1. Location of Septic Tanks

The location of septic tanks shall at least conform to the minimum separation distances in Table I. Openings in tops of tanks

shall be above maximum ground water elevation. Surface water drainage over tanks shall be away from the water wells. (See Figure 1.)

2. Use and Capacity of Septic Tanks

The minimum liquid capacity of any septic tank shall be not less than 750 gallons. The quantity of sewage flow for preliminary estimates of tank liquid capacity may be taken from Table III.

Tank liquid capacities should be sufficient to allow for at least 24 hours detention. However, in some instances where a tank is large and used intermittently, the detention time may be reduced.

It is preferable that one tank be used. If multiple tanks must be used, then not more than three tanks connected in series should be used. The minimum capacity of any tank in series shall be not less than 750 gallons.

The extent of use of septic tanks is limited due to the low degree of primary treatment provided.

(See Figure 4, Page 21.)

3. Construction of Septic Tanks

- a. Septic tanks should be constructed water-tight and of durable materials not subject to excessive corrosion or decay. Metal tanks shall meet Commercial Standard CS 177-51 or better.
- b. Minimum tank liquid capacity of 750 gallons.
- c. Tanks shall be adequately reinforced to prevent structural failure.
- d. Cast-in-place concrete tanks shall have the walls and floor at least six inches thick poured from a 1:2:3 mix in one operation.
- e. Concrete block tanks shall have at least eight-inch walls with cores filled with concrete and be reinforced at the corners. The blocks shall be laid with tight mortar joints. The walls shall be set on a concrete slab at least six inches thick and the wall-to-floor connection shall be satisfactorily sealed.
- f. The liquid depth of a tank or compartment shall be not less than 30 inches. Liquid depths greater than 6½ feet are not advisable.
- g. The tank inlet baffle or sanitary tee shall extend 6 inches below the liquid level and above the liquid level at least to the top of the inlet sewer.
- h. The tank outlet baffle or sanitary tee, and baffles or submerged pipes between compartments, shall extend below the liquid level a distance 4/10 times the tank liquid depth.

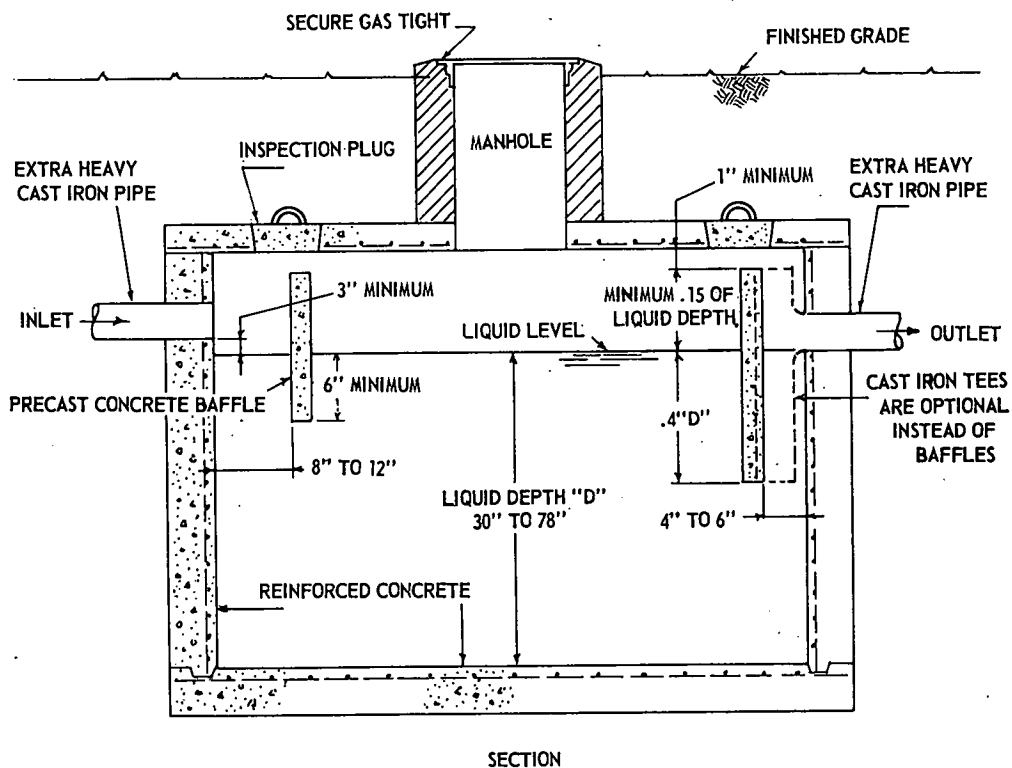
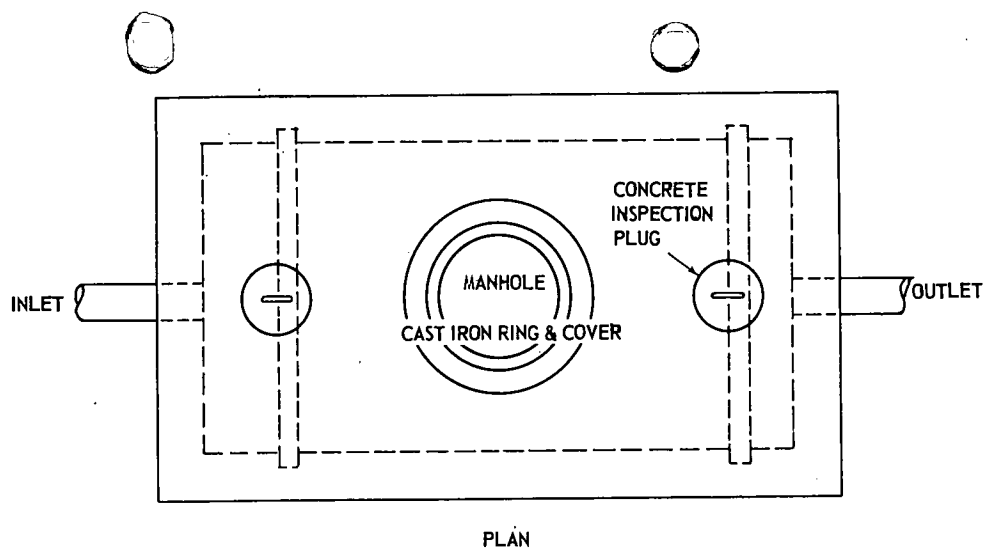


FIGURE 4—SEPTIC TANK
Schematic—No Scale

- i. There shall be at least 1 inch clear space between the underside of the tank cover and the top of the inlet and outlet baffles or tees.
- j. Scum storage capacity (space between the liquid level and the top of the inlet and outlet baffles) shall be not less than 15% of the total liquid capacity of the tank.
- k. Where baffles are used, the tank inlet baffle shall not be more than 12 inches or less than 8 inches from the inside of the inlet end of the tank. The outlet baffle shall not be more than 6 inches or less than 4 inches from the inside outlet end of the tank. Baffles shall be constructed of durable materials not subject to excessive corrosion or decay.
- l. The bottom of the inlet to the tank or the first compartment receiving the flow shall not be less than 3 inches above the flow line of the outlet from that compartment.
- m. Access manholes, extending to the ground surface and fitted with safely secured, gas-tight covers, shall be provided for each tank or compartment.
- n. Access for inspection shall be provided in the top of the tank above the inlet and outlet device of each tank and compartment.
- o. See Figure 4 for representative tank details.

Section 504. SAND FILTER MEDIA

One of the most important factors in sewage sand filter design and construction is the obtainment of the correct sand size for efficient filtering and minimal clogging. It should be particularly noted that highway sand specifications, concrete or mortar sand specifications, or bank run sand, *will not* achieve the desired results. The specifications for such sands *are not* intended as a filtration media for organic and other wastes.

In the obtainment of a satisfactory sewage sand filter media, the following basic features must be considered:

- 1. The sand must be washed clean.
- 2. The sand must have a uniform particle size.
- 3. It may be necessary to set up the proper screens and screen the sand on the job in order to obtain the necessary sand characteristics.
- 4. Sufficient samples must be taken to establish uniformity of particle size and effective size, prior to placing the sand in the filter.
- 5. The filter sand must be placed evenly at least 2 feet thick in the filter.
- 6. Erosion of earth or any mixing or spilling of earth on or into the filter sand must be avoided.

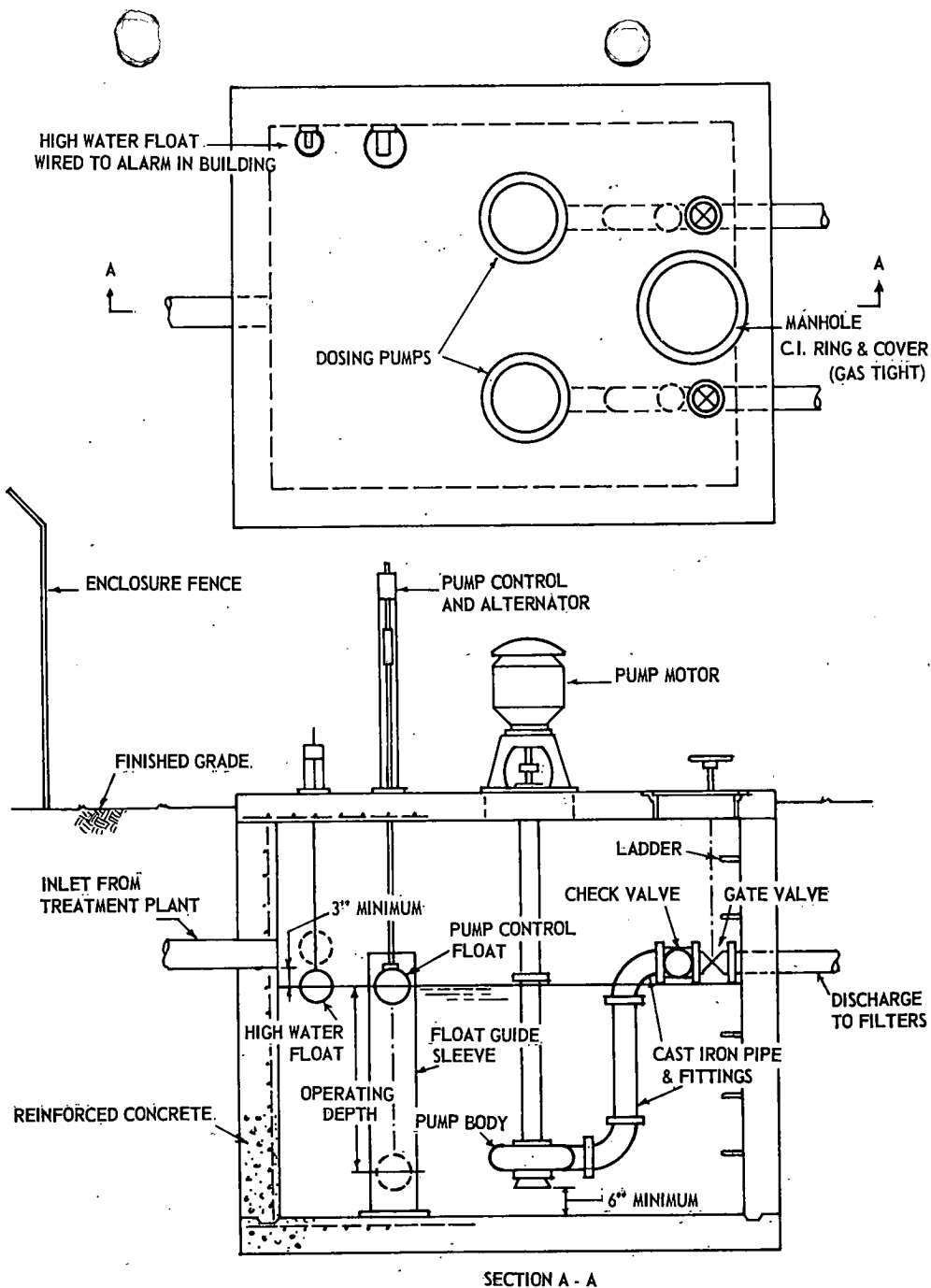


FIGURE 5—DOSING TANK AND ALTERNATING PUMPS
Schematic—No Scale

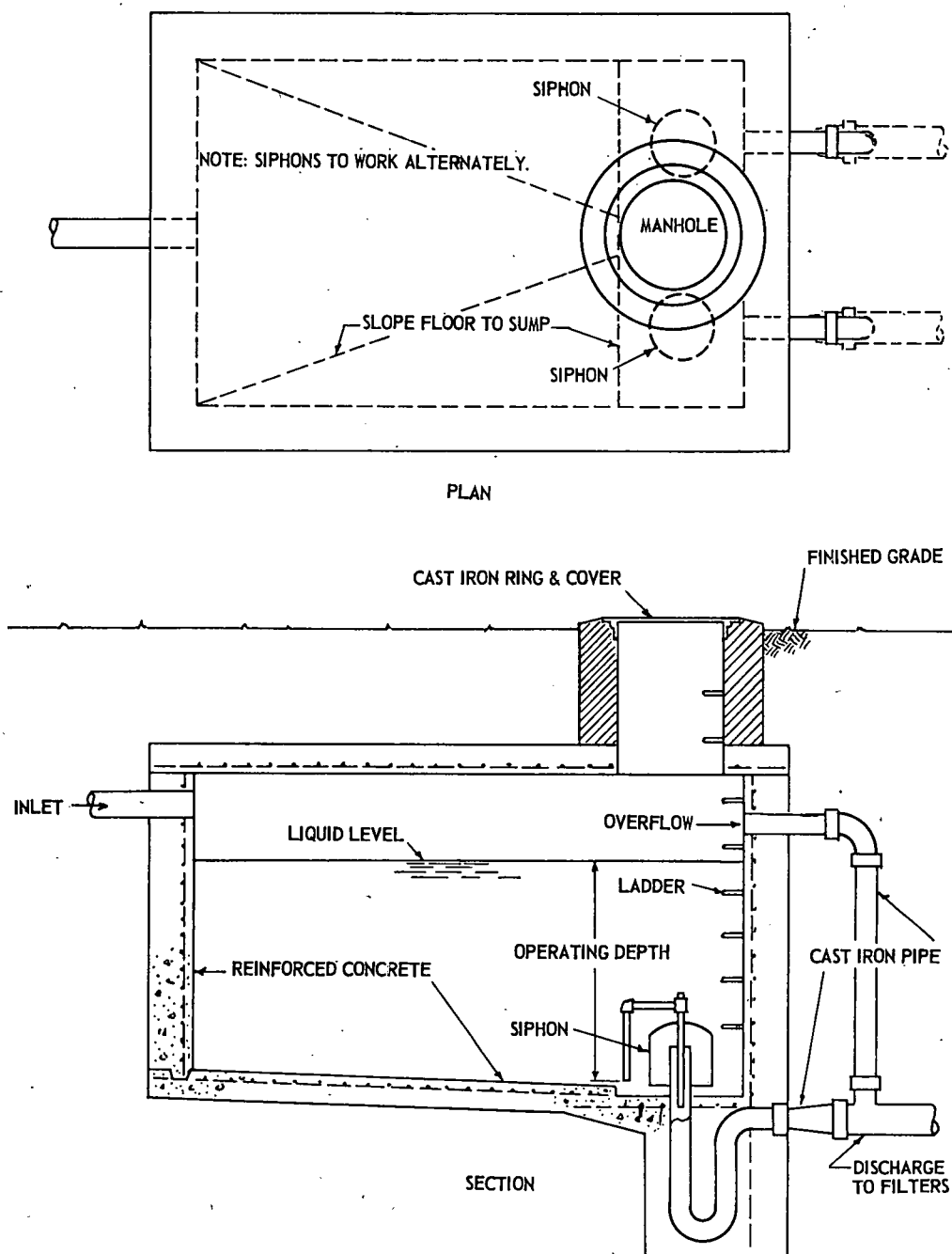


FIGURE 6—DOSING TANK AND SIPHONS
Schematic—No Scale

7. Placement of the filter sand and any other construction work must be carefully done to prevent underdrain breakage or other damage.

Section 505. OPEN SAND FILTER USE AND CONSTRUCTION

Open sand filters are easily accessible for maintenance and inspection. They can be loaded at higher rates than sub-surface sand filters. With proper use, construction and maintenance, they will generally provide a higher degree of treatment than sub-surface sand filters.

The discharge point of final effluent from sewage sand filters and similar shall be selected and located so that a potential health hazard or insanitary condition will not result.

1. Use of Open Sand Filters Required

Wherever sand filters are required or proposed as a part of sewage treatment, such filters *shall be open sand filters*. (See Section 506 for possible exception.)

2. Location of Open Sand Filters

Filters shall be located on a leveled area and above flood levels.

Other location requirements are set forth in Table I. (Also see Section 401.)

3. Dual Sand Filter Unit Requirements

The surface area of each dual sand filter unit shall not be less than approximately one-half of the total filter area required.

The total additive surface area of multiple sand filter units shall be not less than the total filter area required.

a. Open sand filters preceded by primary treatment

Where the total required sand filter surface area exceeds approximately 400 square feet, dual sand filters with alternate dosing shall be provided.

b. Open sand filters preceded by secondary treatment

Where the total required sand filter surface area exceeds approximately 400 square feet, dual sand filters with alternate dosing shall be provided.

4. Use of Rotary Distributors Required

Where the total required sand filter surface area exceeds approximately 1,500 square feet, rotary distributors or the equivalent shall be used to distribute the sewage on the filters.

5. Sizing and Loading Open Sand Filters

a. Open sand filters preceded by primary treatment

Open sand filters preceded by primary sewage treatment shall be sized at a loading rate not to exceed 3 gallons per square foot per day.

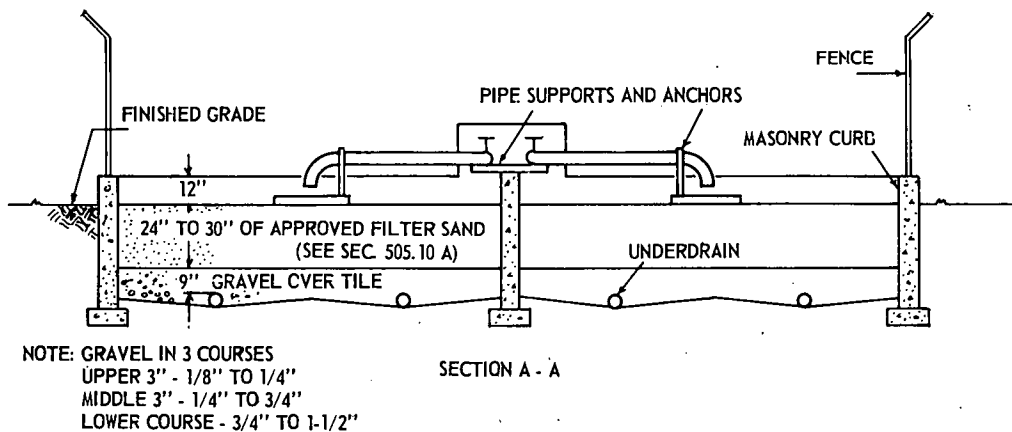
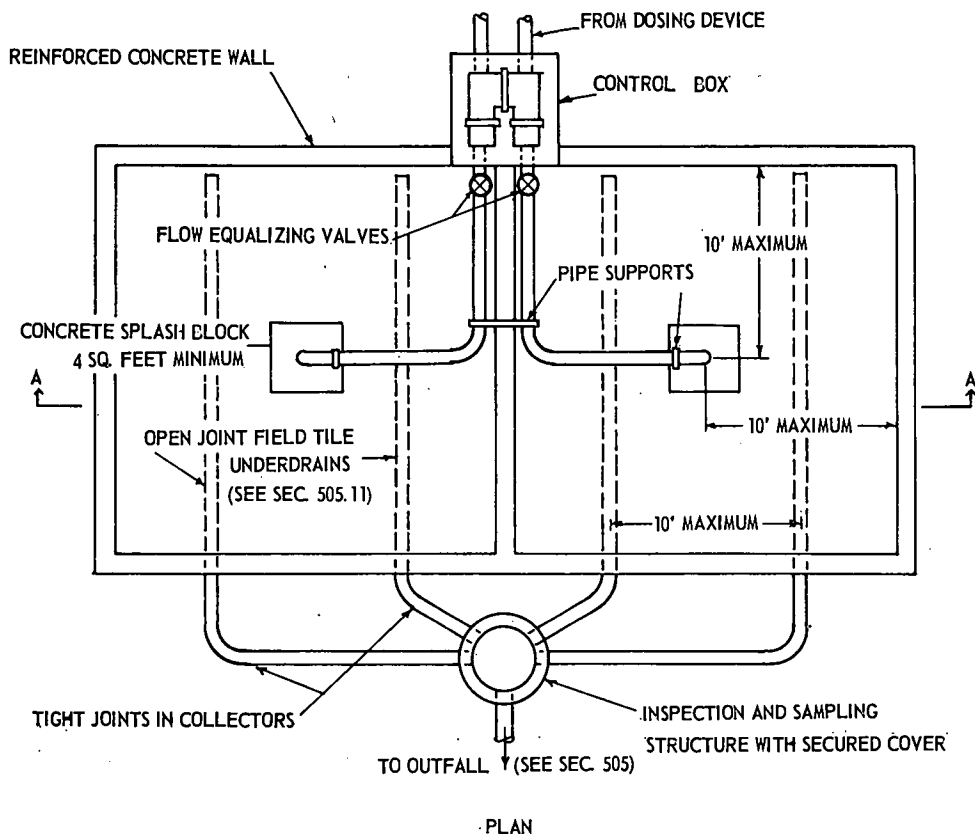


FIGURE 7—OPEN SAND FILTER WITH SPLASH BLOCKS
Schematic—No Scale

b. Open sand filters preceded by secondary treatment

Open sand filters preceded by secondary sewage treatment shall be sized at a loading rate not to exceed 10 gallons per square foot per day.

6. Dosing Open Sand Filters and Dosing Tank Size

a. Open sand filters preceded by primary treatment

Open sand filters preceded by primary sewage treatment shall be dosed not to exceed 3 times per day.

b. Open sand filters preceded by secondary treatment

Open sand filters preceded by secondary sewage treatment shall be dosed not to exceed 6 times per day.

c. Dosing tanks and devices required

Dosing tanks and suitable dosing devices shall be provided for dosing open sand filters. Dosing devices shall be automatically controlled. Pumps are preferable for dosing devices.

Where dual or multiple filter units are used, alternate dosing shall be provided. The capacity and head of the dosing devices, and the pipe size and connections between the devices and the filter, shall be adequate to effectively dose the filter.

7. Distribution of Sewage on Open Sand Filters

a. Rotary distributors

Rotary distributors shall be of the impulse type.

b. Splash plates and flow equalizing valves

Splash plates and distributing pipe to splash plates shall be securely anchored.

Splash plates shall have sufficient area to minimize filter sand erosion around the plate. Splash plates shall have a minimum of 4 square feet area.

Adjustable equalizing valves or gates shall be placed in the pipes to splash plates so that the flow to each plate can be equalized.

The splash plates and the filter sand surface shall be constructed and maintained level.

The maximum filter area served by one splash plate shall not exceed approximately 400 square feet, with a maximum lateral travel of approximately 15 feet.

8. Curbs and Fencing for Open Sand Filters

All open sand filters shall have masonry curbs or the equivalent. Earth walls or earth curbs shall not be used.

a. Curbs

Curbs for filters using rotary distributors shall extend not less than 1 foot above the bottom of the distributor arm.

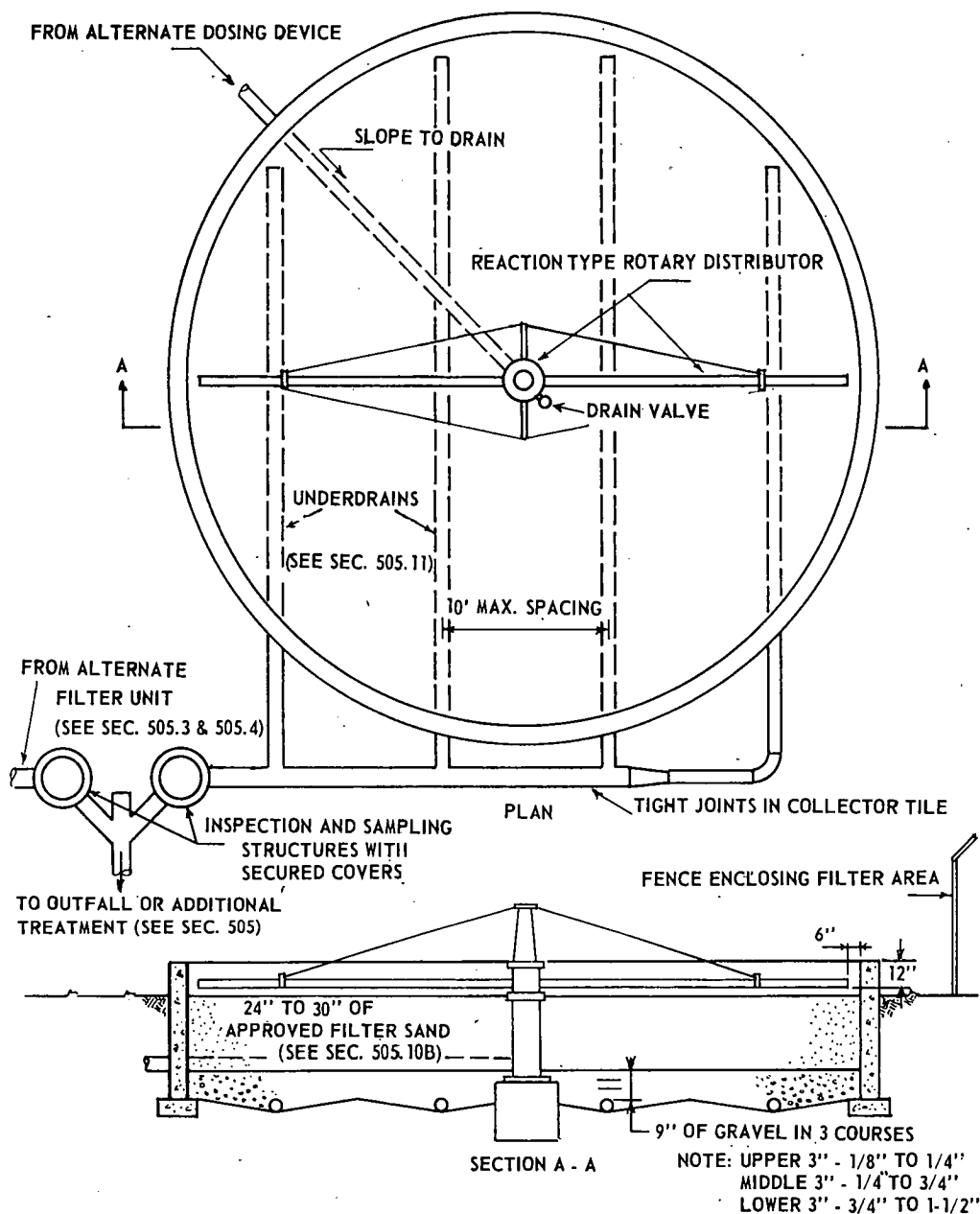


FIGURE 8—OPEN SAND FILTER WITH ROTARY DISTRIBUTOR
Schematic—No Scale

This will help minimize the build-up of ice in winter and prevent contamination of the surrounding area due to strong winds blowing the sewage as it discharges from the ports.

Curbs for filters using splash blocks shall extend not less than 1 foot above the top of the filter sand.

All curbs shall have adequate footings and footing depth, or other structural arrangement, to prevent heaving and to assure safety.

b. Fencing

All open sand filters shall have adequate protective fencing with access gates.

9. Inspection and Sampling Access Structures Required

An adequate inspection and sampling access structure shall be provided in the outfall sewer from each sand filter unit, immediately adjacent to each filter. This may be a manhole type structure or the equivalent not less than 2 feet in diameter.

The access structure shall at least extend upward to finished grade. A safe, securely fastened, vandal-proof cover shall be provided.

10. Filter Sand Requirements

The filter sand shall be clean, sharp, uniform sand.

The filter sand shall be placed not less than 2 feet deep in the filter.

a. Filter sand size when distribution is by splash blocks and similar

For this type of sewage distribution on open sand filters, the filter sand shall have an Effective Size of 0.3 to 0.6 millimeters with a Uniformity Coefficient not greater than 3.5.

b. Filter sand size when distribution is by rotary distributor

For rotary distribution of sewage on open sand filters, the filter sand shall have an Effective Size of 0.4 to 1.0 millimeters with a Uniformity Coefficient not greater than 3.5.

NOTE CAREFULLY that in order to obtain and maintain desirable filter operation and results, it may be **IMPERATIVE THAT THE CONTRACTOR SET UP THE PROPER SCREENS AND SCREEN THE SAND ON THE JOB.** Sufficient samples and analysis must be made of the screened sand to assure the filter sand size requirements are met.

11. Underdrains

The filter underdrain system shall consist of not less than 4-inch diameter drain tile laid with 1/4-inch open joints, or not less than 4-inch diameter perforated pipe having at least

1/2-inch diameter holes spaced uniformly at intervals to at least provide a free, open area equivalent to comparable size drain tile laid with at least 1/4-inch open joints.

Underdrains shall be spaced not more than 10 feet apart and slope not less than 2 inches in 20 feet.

The filter floor shall slope to each underdrain. Underdrains shall be covered to a depth of not less than 9 inches over the top of the drains with washed, graded gravel placed in three layers.

The bottom layer of gravel shall be 3/4 to 1 1/2-inch diameter, the second layer shall be 1/4 to 3/4-inch diameter, the top layer shall be 1/8 to 1/4-inch diameter.

It is important that the gravel be washed clean and sized and placed as indicated to prevent clogging of the underdrains.

12. Grass and Weed Removal From Open Sand Filters

Periodically during the growing season, grass, weeds and other plant growth must be completely removed from the filter surface.

This may be done manually or by use of suitable herbicides. If herbicides are used, extreme caution must be observed to prevent any possible toxic conditions at the outfall which might result in pollution or hazards to humans or animals.

Section 506. SUB-SURFACE SAND FILTERS

1. Limitations of Use

The use of sub-surface sand filters is limited to situations or locations involving special or unusual circumstances or conditions, and then for only small, intermittent daily sewage flows.

Access and maintenance of sub-surface sand filters are not possible without completely tearing out the filter. Loading rates are much lower than for open sand filters.

Construction of sub-surface sand filters is difficult and such filters have a limited operational life.

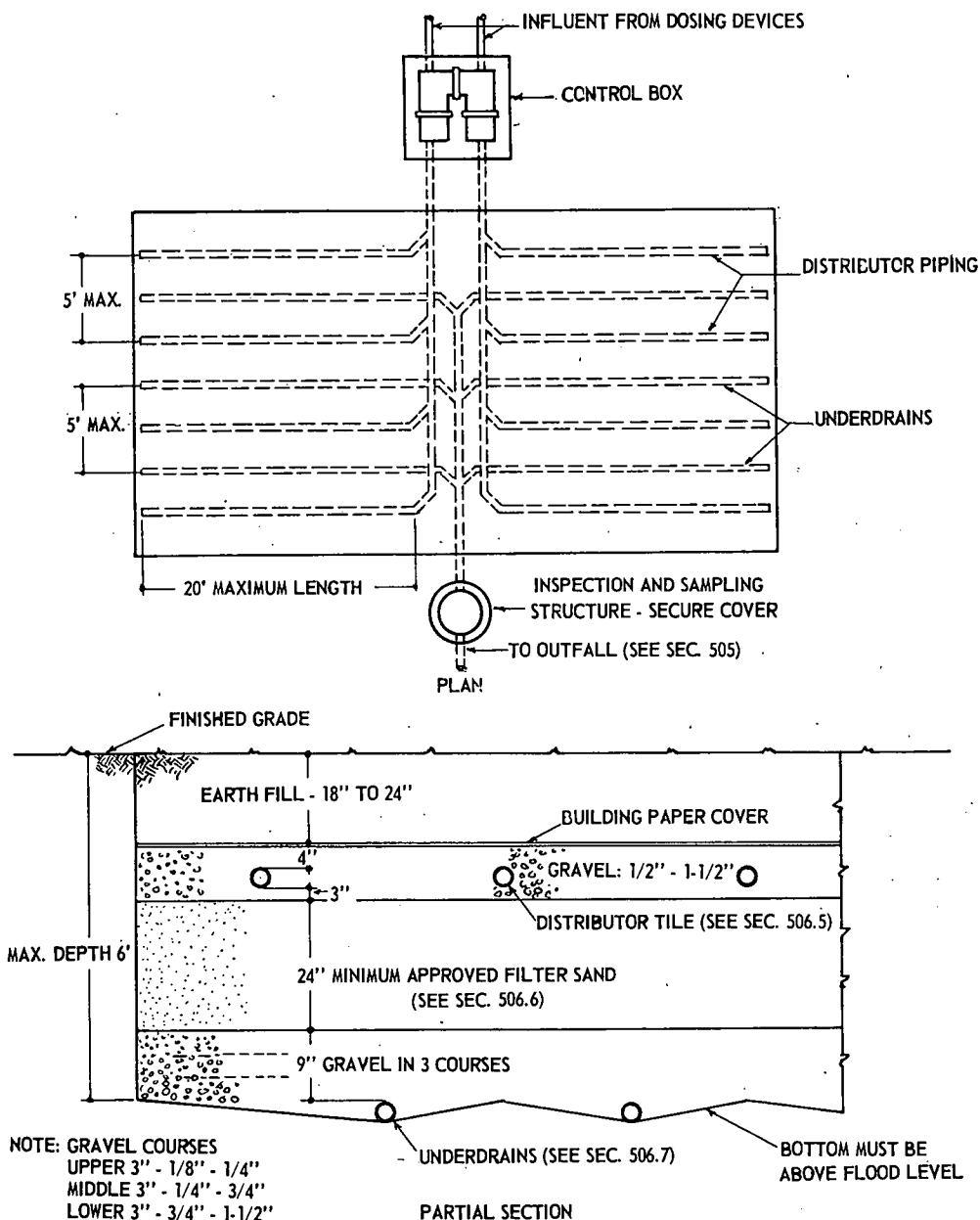
The discharge point of final effluent from sewage sand filters and similar shall be selected and located so that a potential health hazard or insanitary condition will not result.

2. Location of Sub-Surface Sand Filters

Filters shall not be located where excessive ground water infiltration occurs, and they shall be located above flood level. They shall also be located on a leveled area.

The total depth of the filter, measured from the top of the finished grade to the bottom of the filter, shall not exceed approximately 6 feet.

No sub-surface filter unit shall be placed under walks, playgrounds, parking areas, drives, or similar.



SEE SEC 506.1 FOR LIMITATIONS F OF USE

FIGURE 9—SUB-SURFACE SAND FILTER
Schematic—No Scale

Additional location requirements in Table I must be complied with.

3. Sizing and Loading Sub-Surface Sand Filters

The filter shall be sized at a loading rate of not more than $1\frac{1}{2}$ gallons per square foot per day.

Where the total required sand filter area exceeds approximately 400 square feet, dual or multiple filter units with alternate dosing shall be provided.

4. Dosing Sub-Surface Sand Filters

The filters shall be dosed using a dosing tank and suitable dosing devices. The dosing tank and dosing device shall be sized so that each filter unit shall not be dosed more than 3 times per day.

Alternating dosing shall be provided for dual filters. Dosing devices shall be automatically controlled. The dosing device capacity and head shall be adequate to effectively dose the filters. Pumps are preferable for dosing.

5. Distribution of Sewage on Sub-Surface Sand Filters

The sewage shall be distributed over each filter through drain tile or properly perforated pipe.

The distributor tile or pipe shall be not less than 4 inches in diameter. The piping from the dosing device and the distributor piping shall be adequately sized to take the dose applied.

Tile distributors shall be laid with not less than $\frac{1}{4}$ -inch open joints.

Perforated pipe distributors shall have at least $\frac{1}{2}$ -inch diameter holes spaced uniformly around the pipe at intervals to at least provide a free, open area equivalent to the comparable size drain tile laid with at least $\frac{1}{4}$ -inch joints.

The filter distributors shall not exceed 20 feet in length and shall be laid approximately 5 feet apart.

The distributors shall be laid in clean coarse gravel $\frac{1}{2}$ to $1\frac{1}{2}$ inches in size, and this coarse gravel shall extend from 3 inches under the distributors to at least 4 inches above the distributors. This gravel shall be continuous across the filters.

A layer of untreated fibre paper or straw shall be placed continuously over the top of the coarse gravel which covers the distributors, and then 12 to 24 inches of earth backfill shall be placed on the paper or straw.

6. Filter Sand Requirements for Sub-Surface Sand Filters

The filter sand shall be clean, washed, and sharp and placed not less than 2 feet deep in the filter.

The filter sand shall have an Effective Size of 0.3 to 0.6 millimeters with a Uniformity Coefficient not more than 3.5.

7. Underdrains

The underdrain system shall be constructed as in Section 505.11 (Open Sand Filters) except that the spacing of the underdrains for a sub-surface filter shall not exceed 5 feet.

8. Inspection and Sampling Access Structures Required

Inspection and sampling structures shall be provided for each filter unit as in Section 505.9 (OPEN SAND FILTERS).

Section 507. DISINFECTION OF FINAL EFFLUENT

At some locations additional treatment may be required including chemical disinfection of final effluent by use of adequate chlorination facilities. Where additional treatment is required, design and construction details shall be provided as a part of the plans and specifications.

Section 508. SUB-SURFACE ABSORPTION FIELDS

1. Location and Limitations of Use

Under favorable conditions of soil permeability and low ground water levels, sewage effluent from septic tanks may be disposed of by absorption fields. These fields are limited to small daily sewage flows. They shall not be located under drives, parking areas, playgrounds, gardens or similar. Other location requirements shall conform to Table I.

2. Sizing Absorption Fields

Absorption fields shall be sized in accordance with Percolation Test results. See Figure 11 for Percolation Coefficients. The Percolation Coefficient is the square feet of trench bottom area required per gallon of sewage supplied daily to the absorption field.

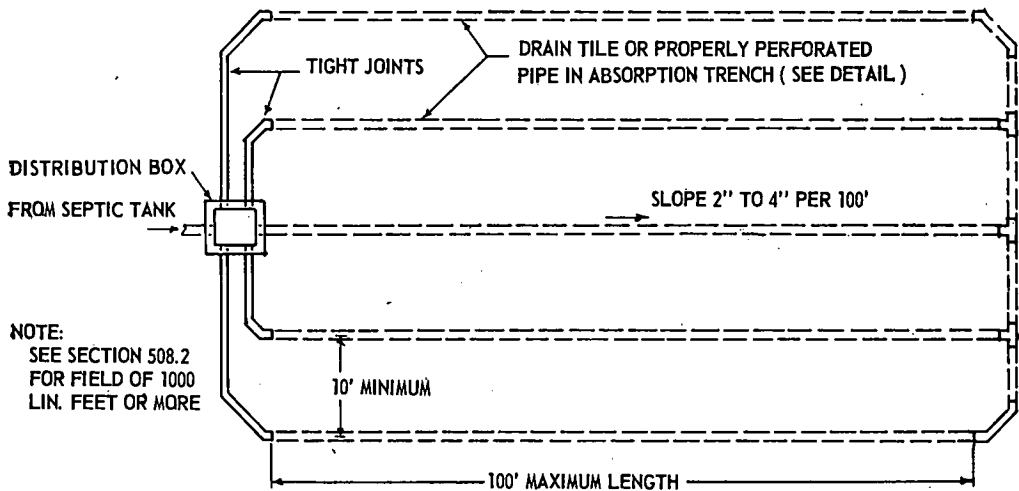
Absorption fields having 1,000 lineal feet or more of trench shall be dosed using a dosing tank and a dosing device. Such fields shall be dosed not more than 4 times per day.

3. Percolation Test Procedures

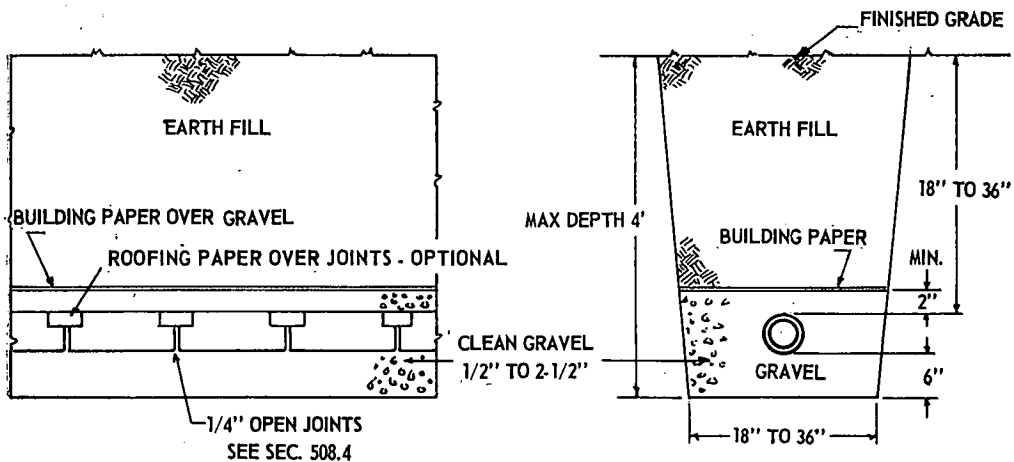
After a site for the absorption field has been selected, several percolation tests shall be made. The percolation tests indicate the absorption rate of the soil. Knowing the absorption rate of the soil, the absorption area (trench bottom area) can be estimated from Figure 11 on page 36.

The procedures for conducting a percolation test are as follows:

- a. Dig or bore holes with horizontal dimensions of from 4 to 12 inches and vertical sides, and to the estimated depth of the bottom of the proposed absorption trench. In order to save time, labor and volume of water required for test, the holes can be bored with a 4-inch auger.
- b. Scratch the bottom and sides of the hole with a knife blade or sharp pointed instrument in order to remove any



PLAN OF ABSORPTION FIELD
SEE SECTION 508
FOR LIMITATIONS OF USAGE



DETAIL OF ABSORPTION TRENCH

FIGURE 10—ABSORPTION FIELD
Schematic—No Scale

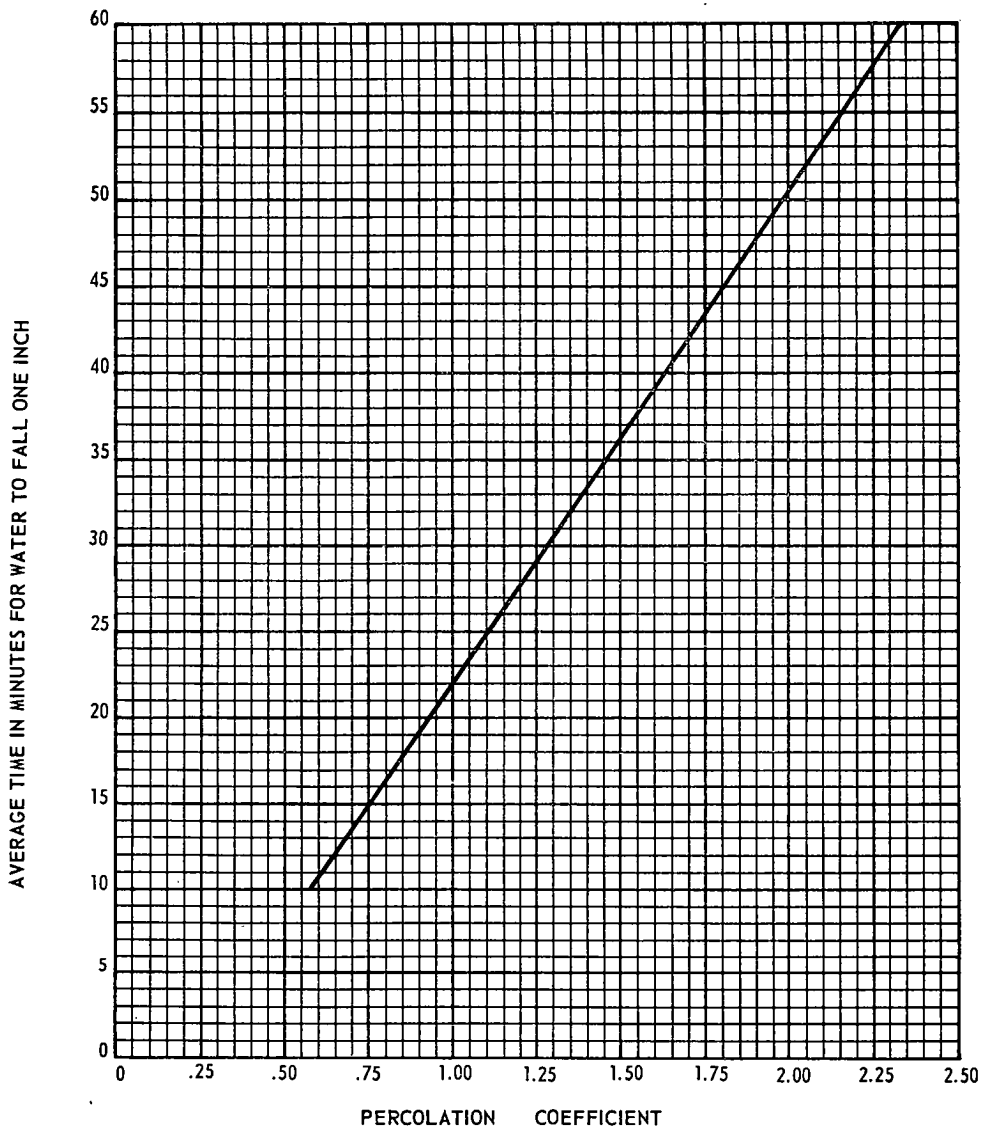
smear soil surfaces and to provide a natural soil interface into which water may percolate. Remove all loose soil from the hole. Place about 2 inches of clean coarse sand or fine gravel in the bottom of the hole.

- c. Carefully fill the hole with clean water. By refilling if necessary, keep water in the hole for at least 12 hours. This saturation procedure will give most soils ample time to swell and approach the conditions that prevail during the wetter seasons of the year. Thus the test will give comparable results whether made during a wet or dry season.
- d. After the 12-hour saturation period, allow the water in the hole to seep away completely. Remove that portion of the sand or gravel which has been coated with soil particles.
- e. Pour about 12 inches of water into the hole and wait until about 6 inches of this water remains.
- f. With about 6 inches of water remaining in the hole, establish a reference point by use of nail stuck in the side of the hole near the top of the hole. From this point obtain a measurement to the top of the water level. Record the measurement and the exact time.
- g. Allow the water to seep away completely. Again record the exact time and compute the distance the water has dropped.
- h. Convert the time interval to minutes and divide this figure by the number of inches of water which has seeped away to obtain the average time for 1 inch of water to seep away.
- i. Determine from Figure 11 the square feet of trench bottom area needed.

4. Construction of Absorption Fields

Absorption trenches shall be not more than 4 feet deep and not less than 2 feet deep (measured from finished grade). The absorption lines shall be constructed of tile laid with $\frac{1}{4}$ -inch open joints. Perforated pipe may be used if the perforations are at least $\frac{1}{2}$ -inch diameter and spaced uniformly to provide at least the equivalent total opening of comparable diameter tile laid with $\frac{1}{4}$ -inch open joints.

The absorption lines shall be surrounded with clean coarse gravel having a minimum size of $\frac{1}{2}$ inch up to $2\frac{1}{2}$ inches, to a depth of at least 6 inches below the lines and extending around and then above the lines at least 2 inches. The coarse



SQUARE FEET OF TRENCH BOTTOM AREA PER GALLON OF SEWAGE APPLIED DAILY.

FIGURE 11—CHART FOR ESTIMATING PERCOLATION COEFFICIENT

gravel should then be covered with untreated building paper or similar and then backfilled with earth. Trenches for absorption lines shall be from 18 to 36 inches wide. The center-to-center separation of absorption trenches shall be not less than approximately 7 feet. (See note below.)

A distribution box should be provided for the absorption field. Absorption lines shall not exceed 100 feet in length and shall be laid at a slope not to exceed 2 to 4 inches per 100 feet. See Figure 10 on page 34.

Absorption fields having more than 1,000 lineal feet of trench shall be dosed, using a dosing tank and dosing device. Such fields shall be dosed not more than four times per day. The tile or properly perforated pipe size shall be adequate to handle the dose applied.

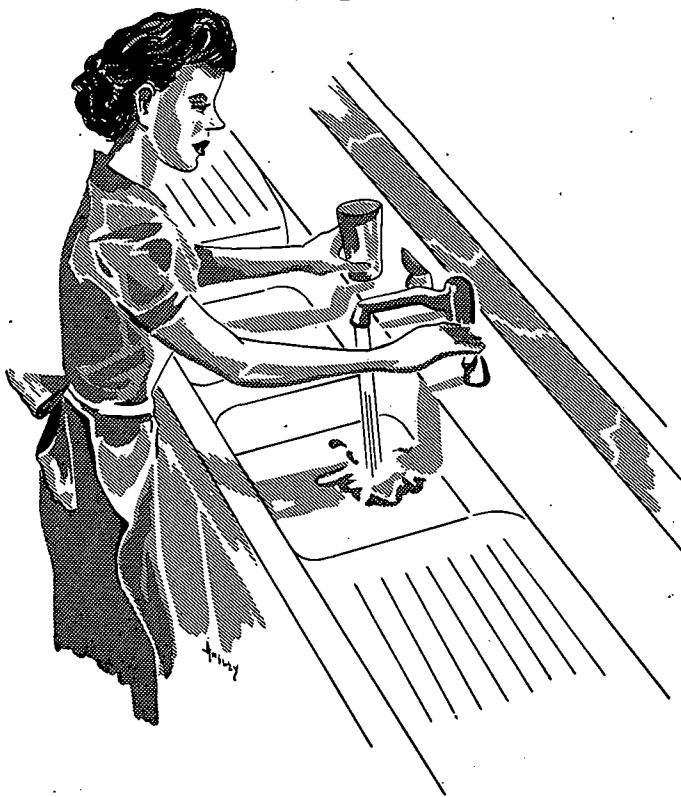
On sloping sites, absorption lines shall follow contours.

NOTE: A minimum trench spacing of at least 10 feet should be used if trucks and other equipment are to work between the trenches.



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Safe Water Supplies



for Farm and Suburban Homes

Published Cooperatively

By

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Purdue University Agricultural Extension Service

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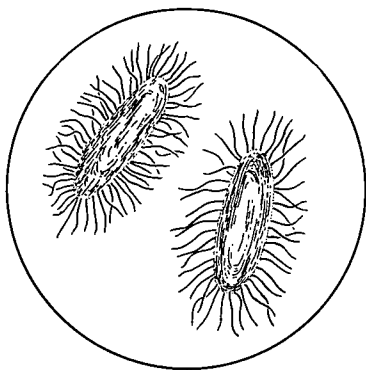
Safe Water Supplies for Farm and Suburban Homes

PART I Public Health Aspects

What Is A Safe Water Supply Well?

A safe water supply well should have as its source an uncontaminated water bearing formation. The water should be pleasing to drink, bacteriologically and chemically safe and be delivered through a system which will keep it safe. To accomplish this, the well must be located and constructed to keep out surface and near-surface contamination. The most desirable wells will yield ample quantities of soft, cool, pleasing to drink water which does not have excessive amounts of undesirable minerals.

Disease and Unsafe Water Supply Wells



**Figure 1 — Diagrammatic sketch
of filth-borne disease bacteria
(Enlarged 10,000 times).**

If water supplies are not properly located, constructed and managed, they may be a serious public health hazard. Dysentery, diarrhea, typhoid fever and other intestinal diseases can be transmitted by unsafe water. Unsafe water supplies are not only a hazard to the immediate user but are dangerous to the health and lives of travelers or visitors who partake of the supply. Disease can also be spread by using unsafe water in preparing and processing food products.

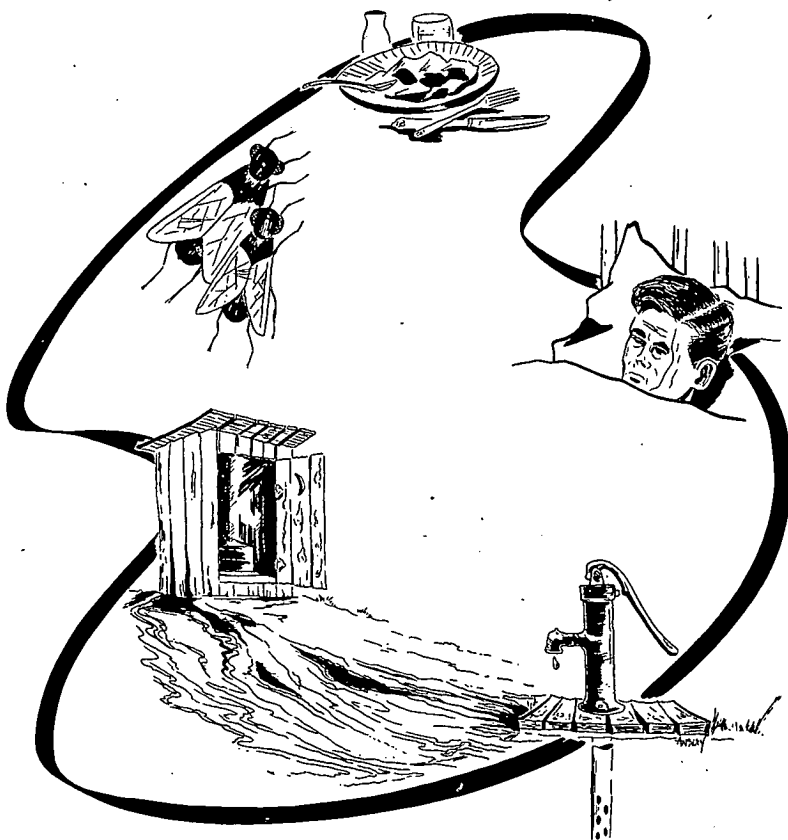


Figure 2—Some ways of transmitting filth-borne diseases.

Obtaining Safe Water from Wells

A well may be considered as a direct opening into the ground water source. Without proper protection the well can serve as a port-of-entry for surface and near-surface drainage, bacteria, insects, small animals and other contaminants. To make sure that only safe water from wells is used, it is first necessary to know some of the many ways wells become contaminated. Next, it is necessary to know the sanitary requirements of well location and construction.

Surface Contamination

Surface contamination usually enters the well through openings in the pump, openings in the well platform, faulty sealing at the top of the casing, through weepholes, seepage or drainage along the outside of the casing and down around it to the

ground water. Hand pumps with open top, trough-type spouts or large slots where the pump rod enters the top of the pump are especially bad. They allow air-borne contamination, insects, excreta from birds and contaminated priming water to enter the well.

Wells with cracks or openings in the platform may allow waste water from the pump, surface drainage, insects, small animals or filth carried on shoes to enter the supply. This is especially dangerous where dug wells are used. Improper sealing and construction at the casing mouth or pump-to-casing connection also permits entry of contaminants.

Sub-Surface Contamination

Sub-surface or near-surface contamination is caused by seepage into the well at some point below the ground surface. Contaminated near-surface water is subjected to some filtering action. Filtering action is not altogether a simple straining or sieving process. The effectiveness of filtering action will vary greatly with the kind of earth material or formations through which the water passes. Sand and other fine-grained materials may remove a large portion of the impurities in water, providing the filtering layer is sufficiently thick and not cracked or broken.

Naturally occurring filtration of ground water should never be accepted as a substitute for safe well location and construction. The well with its protective casing should be far enough from privy pits, absorption fields, building sewers, septic tanks, barn lots and manure piles to prevent contamination by sub-surface seepage.

Cross-Connections and Back Siphonage

A cross-connection is a piping arrangement whereby water from more than one source may be forced through the same distribution or plumbing system. A safe water supply system should never be cross-connected with an unsafe one. This may introduce contamination into the safe supply. Auxiliary water supplies are hazardous from a public health standpoint. If it is necessary to have an unsafe water supply for fire protection, irrigation, or similar purposes, use a separate pumping and distribution system with no connections to the safe supply.

Back siphonage means drawing polluted water from a plumbing fixture into a supply line. This may happen when the pressure on the water supply line is lowered and there are no adequate plumbing arrangements (siphon breakers) to prevent it.

PART II

Elements of Ground Water Geology

Movement of Ground Water

The rate at which rain and melted snow seep into the soil depends on many factors. Only a portion of the rain and melted snow moves downward through underlying subsoil and rock and reaches the level of the completely saturated underground formation. The level of the water in this formation is the water table. The greater portion of the rain and melted snow is lost through surface run-off, evaporation and plant usage.

Water running along the ground surface picks up particles of soil, filth and bacteria. The portion of the water which seeps into the soil and rock is subjected to a filtering action. Most soil and rock formations contain soluble minerals which may be dissolved in the water as it seeps through the ground. It is in this way that ground water may pick up color, staining properties, hardness and some tastes and odors.

Ground water is not generally stationary, but moves slowly from places of higher elevation to places of lower elevation. The rate at which underground water moves may vary, from only a few feet a year in some formations to as much as several feet a day in others.

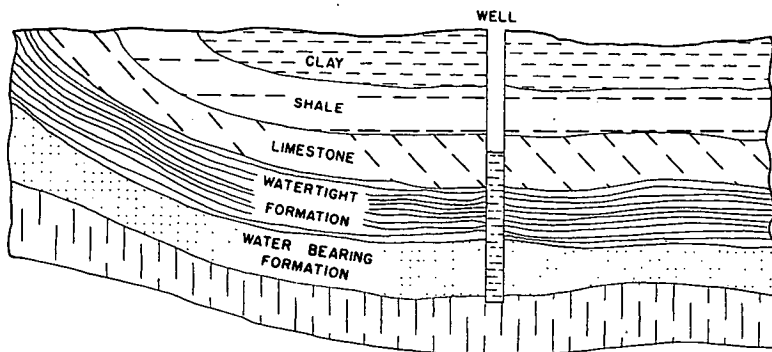


Figure 3—Water bearing formations overlain by impervious or water-tight formations are usually the most desirable water sources.

Water Bearing Formations

In Indiana the underground formations yielding the most water to wells are deposits of sand and gravel, sandstone, or

limestone. Water in sandstone may move through the whole formation or it may be limited to cracks or joints. Water in limestone usually moves along cracks or joints. In some places water may be obtained from shale or clay formations although the quantity is usually small and the quality may be poor.

Water bearing formations overlain by impervious or water-tight formations, as in Figure 3, are usually the most desirable. Such water bearing formations are recharged by lateral seepage from a locality where the impervious formation is absent or has changed so that it permits water to pass through it.

Cracked or fissured limestone water bearing formations, which are penetrated by sinkholes or outcrop to the ground surface are not desirable water sources. (See Figure 4.) They may furnish an unsafe supply because of insufficient filtration.

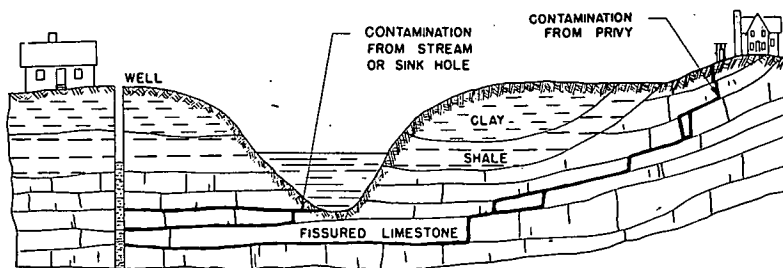


Figure 4—Cracked or fissured limestone formations that are penetrated by sinkholes or that outcrop to the ground surface may furnish an unsafe water supply.

Yield of Water Bearing Formations

The yield of a water bearing formation depends on many things: How easily will water move through it? How many wells are in the vicinity? What is the rate at which they are pumped and the rate of recharge? Variations in rainfall, artificial drainage systems and the construction of the well will also affect the yield of the water bearing formation. In sandstones or limestones where the ground water moves through cracks, fissures or joints, the yield also depends on the number and size of openings intersected by the well.

Locating Water Bearing Formations

In many localities the underground formations are regular enough that information from nearby wells will indicate where water can be obtained. In some areas nature deposited the underground formations in such irregular fashion that it is impossible by usual methods to know what lies below the ground

surface. In such areas information from nearby wells is often misleading.

Ground water is not always at the same depth below the surface. Figure 5 shows that wells located on bluffs may, of necessity, be deeper than wells on the high ground farther from the stream.

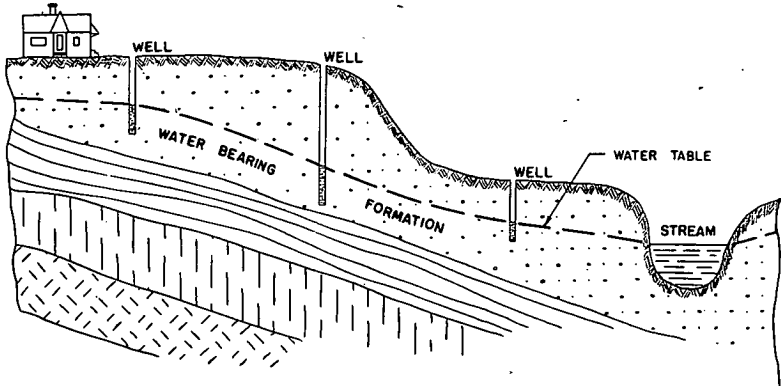


Figure 5—Ground water is usually nearer the surface in a valley floor or on high ground at appreciable distances from the edge of the hill or bluff.

In general, water can be obtained nearly any place that is underlain with sand and gravel. General information on the types of formations underlying an area can be obtained from the Division of Water Resources, State Department of Conservation, Indianapolis, Indiana.

PART III

Location of Wells

Minimum Distances from Sources of Contamination

To obtain safe water from wells, it is first necessary to locate the well and underground pump suction lines at safe distances from all possible sources of contamination.

If it is necessary to construct sewers closer than 50 feet to any private water supply well or underground pump suction line, use extra heavy cast iron soil pipe with leaded and calked joints. Do not construct cast iron sewers closer than 20 feet to dug or bored wells and not closer than 10 feet to drilled or driven wells or underground pump suction lines.

For maximum protection of the water supply, underground pump suction lines should not be used.

TABLE I
MINIMUM DISTANCES OF WELLS AND UNDERGROUND
PUMP SUCTION LINES FROM SOURCES OF
CONTAMINATION

	Minimum Distance
Sewers and Drains	50 feet
Septic Tanks and Absorption Fields.....	50 feet
Privies	50 feet
Seepage Pits	100 feet
Stables, Livestock Runs, Manure Piles, etc.....	50 feet
Streams, Lakes, Ponds, Ditches.....	25 to 50 feet
Property Lines	-
Dug and Bored Wells.....	25 feet
Drilled and Driven Wells.....	15 feet

Also, maintain minimum distances from any
source of contamination adjacent to property lines.

Dwellings (wells only)Outside the foundation walls

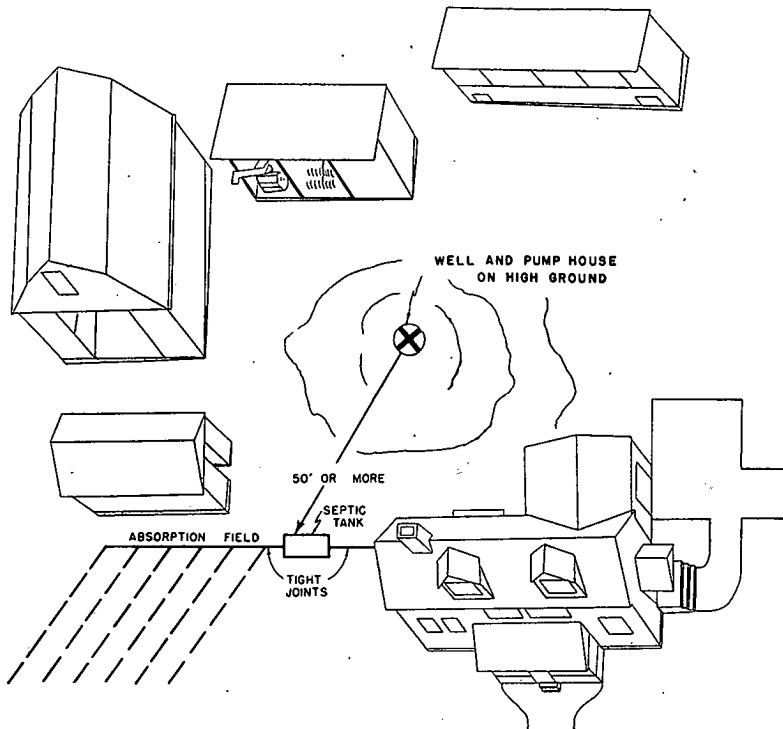


Figure 6—Locate the farm home well at a safe distance from all possible sources of contamination.

Additional Precautions

1. The well top should be at a higher elevation than any surrounding source of contamination.
2. In areas subject to flooding, the well casing should extend above the highest known flood water level.

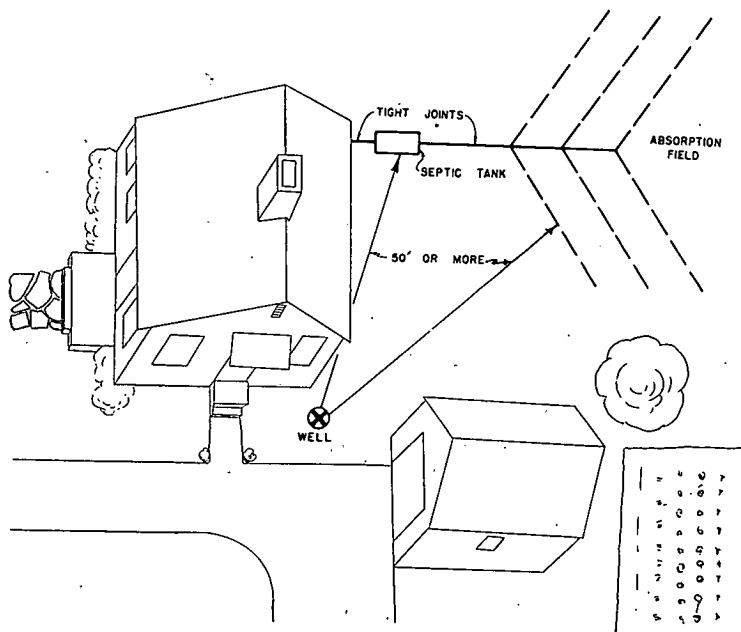


Figure 7—Locate the suburban home well at a safe distance from all possible sources of contamination.

PART IV

Construction of Wells

TYPES OF WELLS

Dug Wells and Bored Wells

Dug wells and bored wells are usually shallow and hand excavated. They are not generally desirable for sanitary ground water and may furnish a limited supply of water.

Casing

If it is necessary to construct a dug well, use a watertight concrete casing extending from 12 inches above the normal

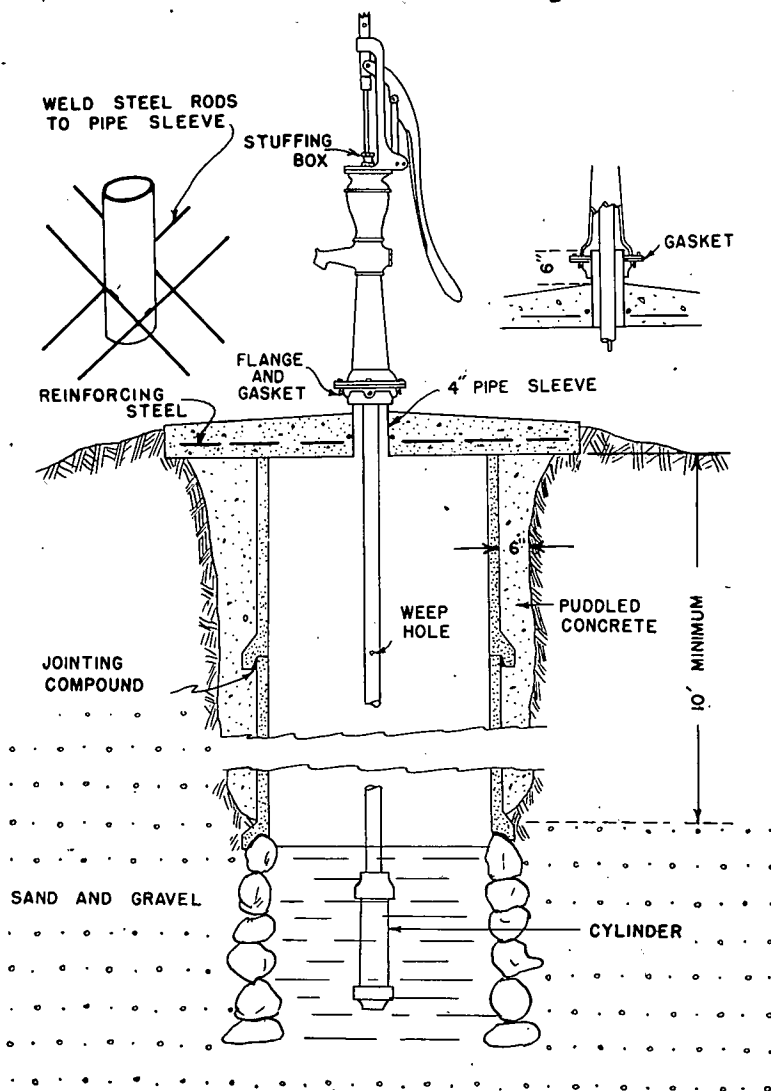


Figure 8—Dug well.

ground surface to at least 10 feet below the normal ground surface. Make the casing at least 6 inches thick from a 1:2:3 concrete mix poured in one operation. Where possible, use the earth wall for the outside form. Tile or concrete pipe can be used for the inside form. (See Figure 8.)

Driven Wells

Driven wells are constructed by driving into the ground a pipe that is fitted with a drive point and screen. Driven wells are usually shallow and seldom more than two inches in diameter. These wells are confined to locations where water bearing formations are near the ground surface and where there is no intervening rock, boulders or other unyielding earth materials between the ground surface and the ground water.

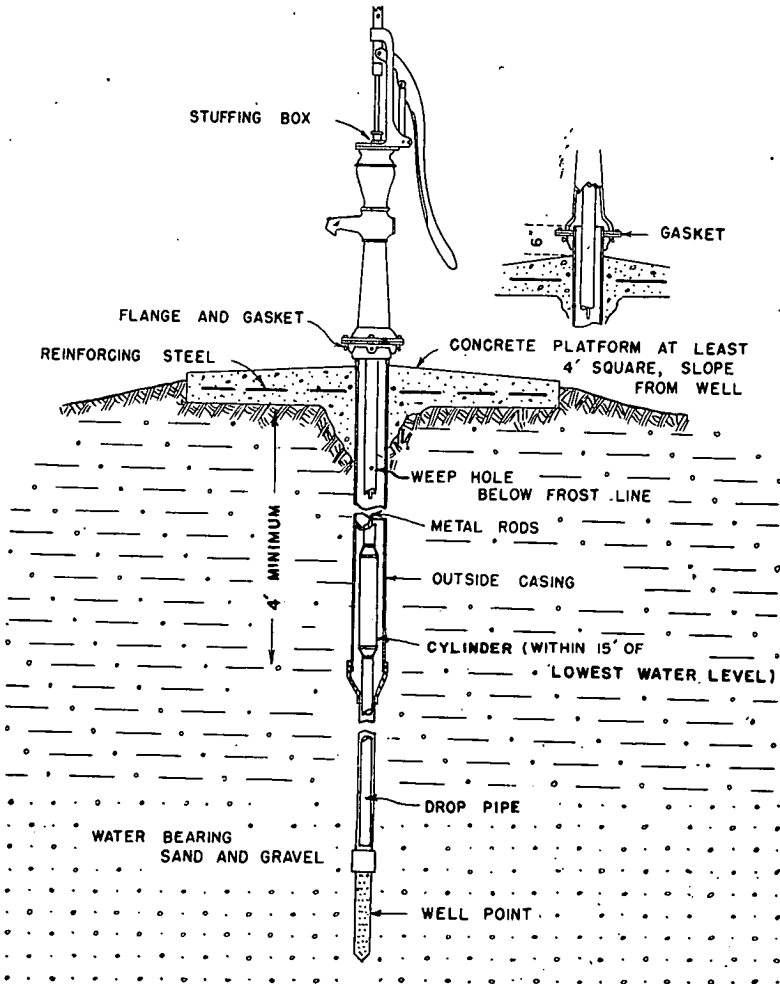


Figure 9—Protective outer casings are needed for driven wells. The cylinder and weep hole may be placed below frostline by excavating at least 4 feet deep and attaching 4 inch outside casing to drive pipe with a threaded reducer.

Casing

Use new wrought iron or steel pipe with welded or threaded joints for the casing. The casing should extend at least 12 to 18 inches above the ground surface after the well is driven.

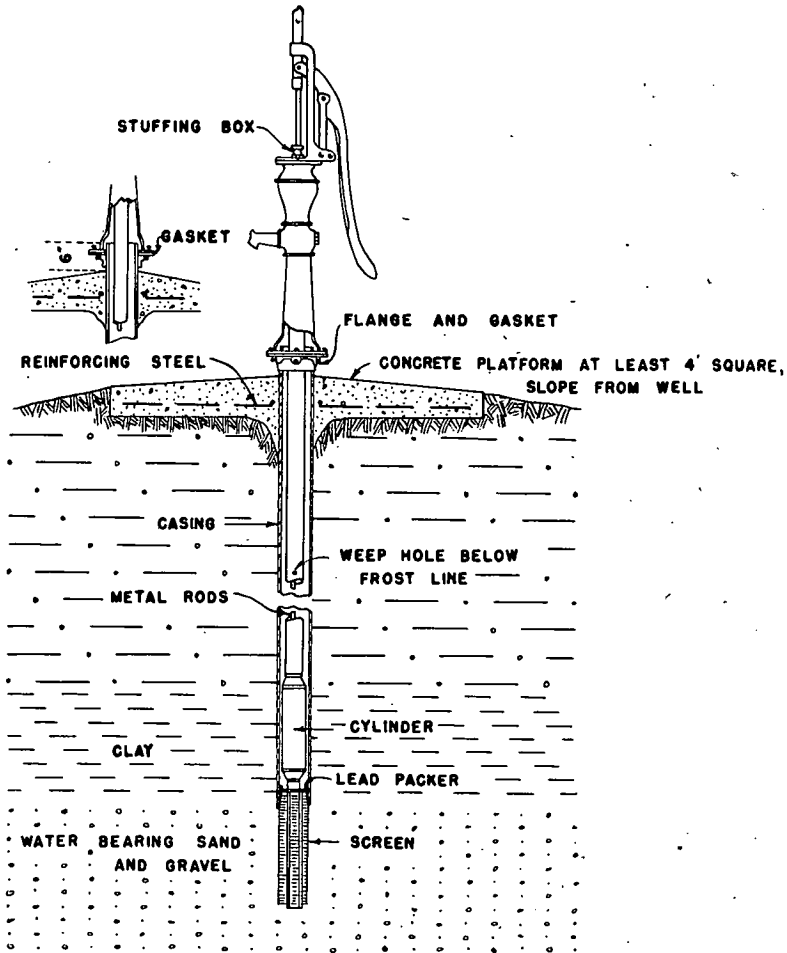


Figure 10—Drilled well with pump attached to flange.

Drilled Wells

Drilled wells are excavated with a percussion or rotary drilling rig. They penetrate to greater depths than other types of wells.

Percussion Drilling: A set of drilling tools attached to a cable or rope is suspended from a derrick. The drilling

tools are alternately raised and dropped. The accumulation of waste in the hole is usually removed by a bailing process.

Rotary Drilling: A rotating cutting tool or bit to which pressure is applied does the drilling. Waste material in the hole is removed by circulating a mud-laden fluid through the drill pipe.

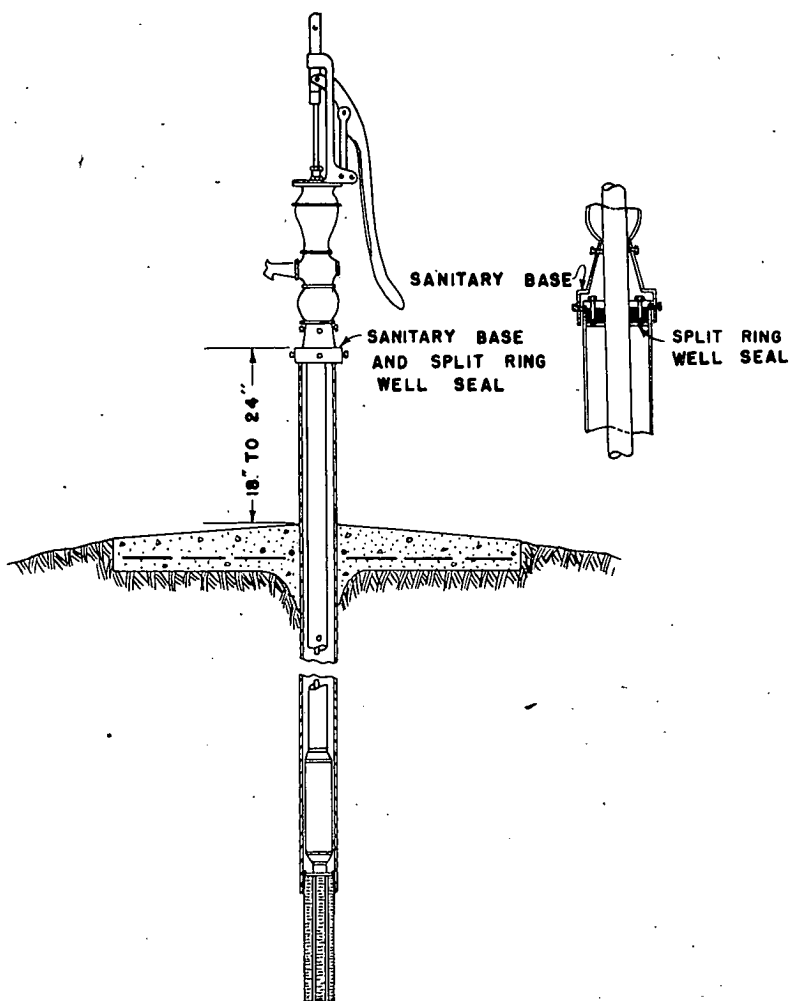


Figure 11—Drilled well with pump installed using a split ring sanitary well seal and a sanitary well base.

Casing

Use new wrought iron or steel casing with welded or threaded joints. The casing is usually driven into the hole as the drilling progresses. The casing should extend at least 12 to 18 inches above the ground surface after the well is drilled. Where an impervious formation overlays the water bearing formation, the casing should extend into it and the driller should seal with cement grout around the casing at the point of junction.

In all other instances the casing should extend to the water bearing formation. In unconsolidated water bearing formations, such as sand and gravel, a well screen should be attached to the bottom of the casing.

Jetted Wells

Water under pressure is forced through a nozzle or jetting bit and the waste material is carried out of the hole by the ascending water from the jetting operation. The jetting process usually cuts a hole that is larger than the casing. This is undesirable and may allow contaminated surface and near-surface water to seep down along the outside of the casing and into the well unless sealed with cement grout. Jetting cannot be used where limestone or other unyielding formations are encountered.

Flowing Wells

In some water bearing formations that are overlain by impervious formations, the ground water is subjected to enough pressure to cause it to flow from the mouth of the well casing. A cement grout seal should be used around the outside of the casing, extending from the impervious formation upward to the ground surface.

This seal will prevent the ground water from seeping upward along the outside of the casing and then being drawn back into the well when pumping begins thereby causing contamination. Flowing wells should be capped to prevent needless waste of water and possible contamination at the casing mouth.

Depth of Wells

Private water supply wells should be at least 20 feet deep and in a water bearing formation not likely to be contaminated. However, a deep well will not necessarily produce more water than a shallower well.

Screens

Screens are used on the bottom of a well casing to prevent entrance of earth materials from the water bearing formation

but which will permit entrance of water. The type of screen to use depends on how corrosive the water is and what type of earth material forms the water bearing formation.

In most cases screens made from an alloy of at least 90 per cent copper plus silicon and manganese are satisfactory. For sulphur waters, a stainless steel screen should be used. The size of the screen opening is usually determined by obtaining samples of the water bearing formation.

Development of Wells

Newly drilled wells are usually developed by the driller to increase the yield of water. Well development is a specialized part of well construction and should only be attempted by a competent driller. New wells are usually developed by surging, blasting or acidizing.

Surging: By alternate application of pressure and suction with water, steam or air, the finer particles in the water bearing formation are drawn in through the screen and pumped out the top of the casing.

Blasting: In some limestone water bearing formations, the underground seams and channels may be opened by detonating an explosive such as dynamite at the bottom of the well.

Acidizing: New wells in limestone may sometimes be developed with special acids.

Testing Wells for Quantity and Quality of Water Produced

Upon completion, new wells should be tested for yield to determine if the well will supply the quantity and quality of water needed. The well may be yield-tested by temporarily installing a high capacity pump and pumping at a continuously high rate for at least 12 to 24 hours. Bailing by hand or with the drilling rig is a questionable method of yield-testing. While pumping, the water level in the well should be measured frequently to find out the rate at which the water in the well is being exhausted.

Other Important Considerations

New wells and pumping systems usually are quite expensive, but a safe, adequate water supply is indispensable to family health and business. Certain basic understandings or agreements should exist between the owner and the driller before construction is started. Wells should be constructed by competent, reputable drillers. The well should meet the requirements of location, construction and sanitation stated in this bulletin.

Determine the cost and extent of materials to be furnished by the driller and by the owner. Any guaranty to "get water" should be accompanied by a limiting cost. Only new water well casing should be used. The shaft or hole may need to be tested for plumbness or alignment. This is especially true for deep wells.

Determine the height above ground to which the casing will extend and whether it is to be threaded or smooth at the cut. The driller should keep an accurate record of the depth below ground surface and the thickness and the type of each underground formation penetrated. Development of the well may be necessary. Adequate disinfection and satisfactory bacteriological tests are necessary before the well is used.

PART V

Types of Pumps

Hand Pumps

Hand pumps should have a closed downward type spout and a stuffing box at the top of the pump to seal the opening through which the pump rod moves. Hand pumps, such as the chain, open sweep or pitcher type, which have unprotected openings should not be used.

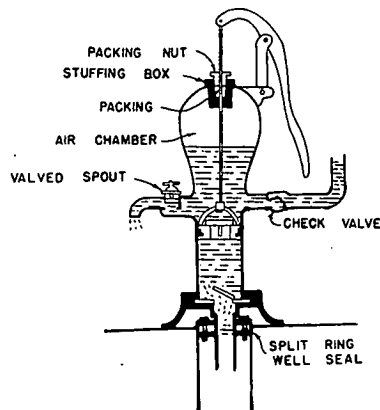


Figure 12—Hand pressure pump.

A hand pressure pump is sometimes used to force water to elevated storage tanks or through limited distribution systems. All cylinder type hand pumps should have metal pump rods.

Shallow Well and Deep Well Mechanical Pumps

So-called shallow well and deep well pumps do not refer specifically to the depth of the well. A shallow well pump has its pumping device, such as a jet or impeller, located at or above the ground surface. This limits the depth from which water may be pumped. Shallow well pumps operate best where the vertical distance from the pumping device to the lowest pumping water-level in the well is not more than 15 to 20 feet.

Deep well pumps have the pumping device, such as a cylinder or jet assembly, usually located near the lowest pumping water level in the well. The depths from which water may be pumped will vary with the type of pumping device used. All activating rods or cables for mechanical pumps should be made of metal.

Centrifugal and Turbine Pumps

These pumps have an impeller which rotates at high speed in a close-fitting housing. When the impeller rotates at high speed, it develops a partial vacuum in the suction pipe and the pressure needed to force the water into a pressure tank. They may have single impellers or multiple impellers. Deep well pumping installations are made by special mounting of the impellers down in the well casing.

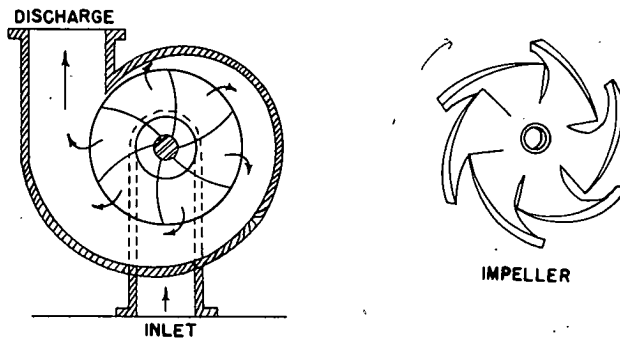


Figure 13—Centrifugal pump.

Jet or Ejector Pumps

A jet pump employs the principle of high velocity water through a small opening to create a partial vacuum. This feature enables it to suck water into the jet assembly and to discharge it into a pressure discharge line. The high velocity water to operate the jet is obtained by using an auxiliary pumping unit. In shallow well jet pumps the jet assembly is usually in the same housing with the pump that supplies the water for the jet. (See Figure 15.)

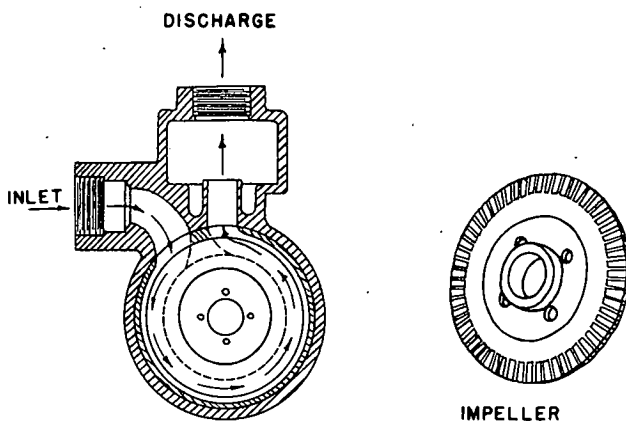


Figure 14—Turbine Pump.

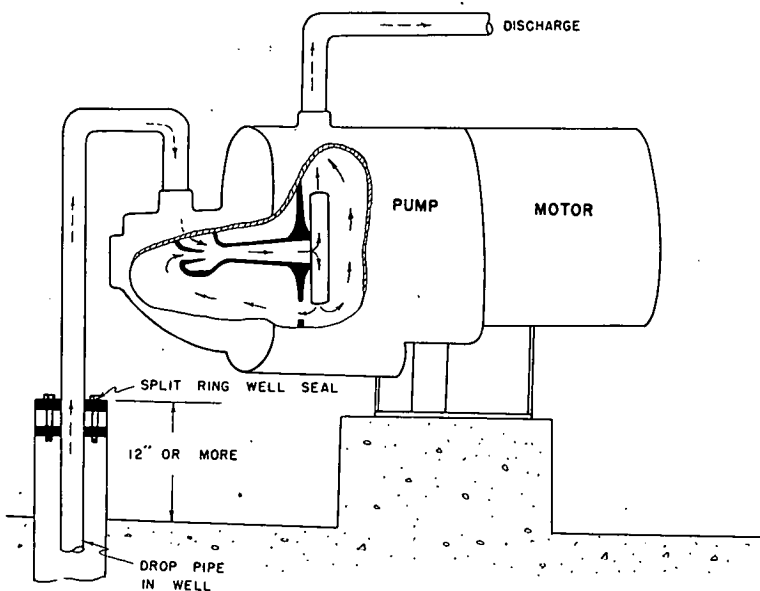


Figure 15—Shallow well jet pump.

In the deep well jet pumps, the jet assembly is located in the well casing near the water level. The auxiliary pumping unit is located with the motor at the ground surface. (See Figure 16.) Where deep well jet pumps are used, the well casing should be large enough to permit entry of two drop pipes. In small well casings it is sometimes possible for the casing to

serve as one of the drop pipes, although this is not considered as satisfactory as where the well casing is large enough for two drop pipes. Shallow and deep well jet pumps may be offset from the well.

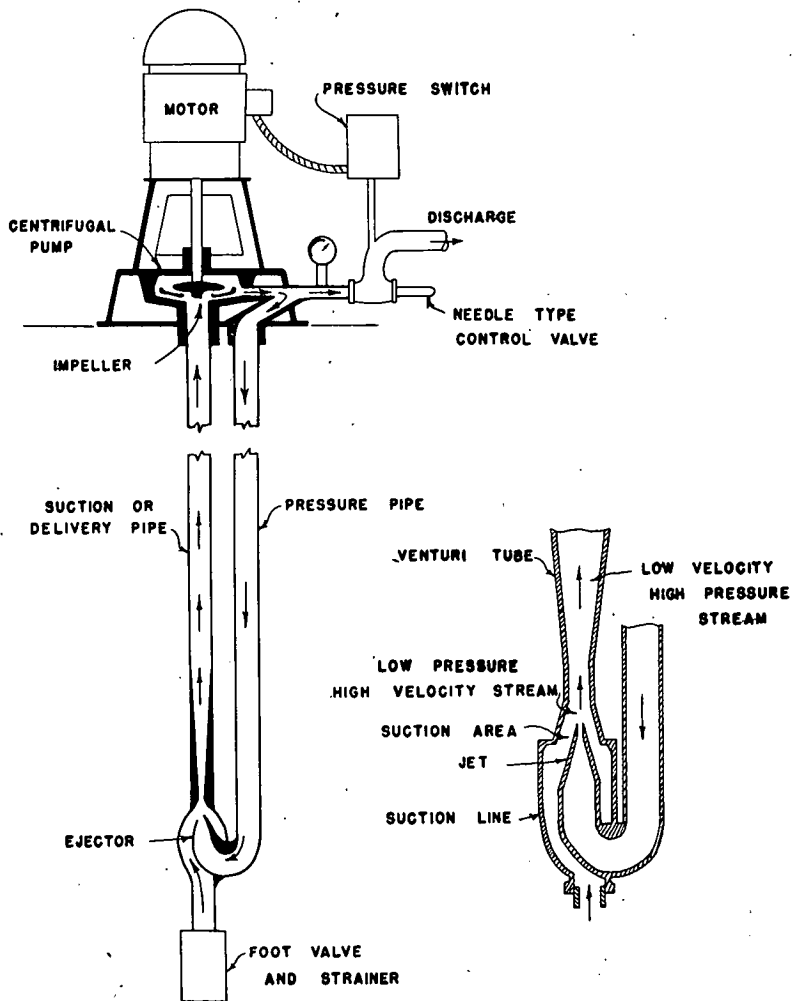


Figure 16—Deep well jet pump.

Piston or Reciprocating Pumps

The shallow well reciprocating pump has the cylinder and piston located in the pump housing. (See Figure 17.) It is a positive displacement pump.

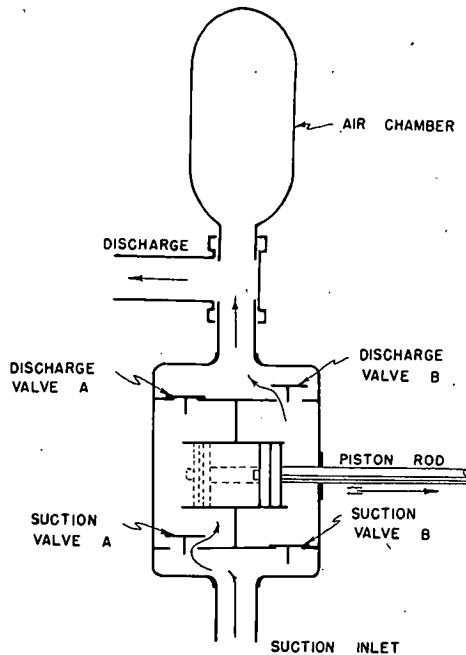


Figure 17—Shallow well reciprocating pump.

The piston type pump which is activated by the pump rod may be used as either a shallow or deep well pump. (See Figure 18.) By locating the piston near the lowest pumping water level in the well, it will bring water from almost any depth. The capacity of the pump depends on the displacement of the cylinder and the number of strokes per minute. The possible discharge pressure from this pump is limited only by the strength of the equipment.

Rotary Pumps

Rotating gears in a closely machined housing develop suction and pressure for pumping. This pump is most frequently used as a shallow well pump. (See Figure 19.)

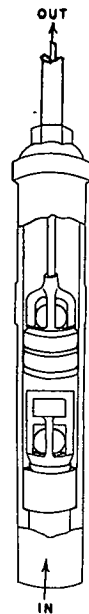


Figure 18—Cylinder for deep well pumps.

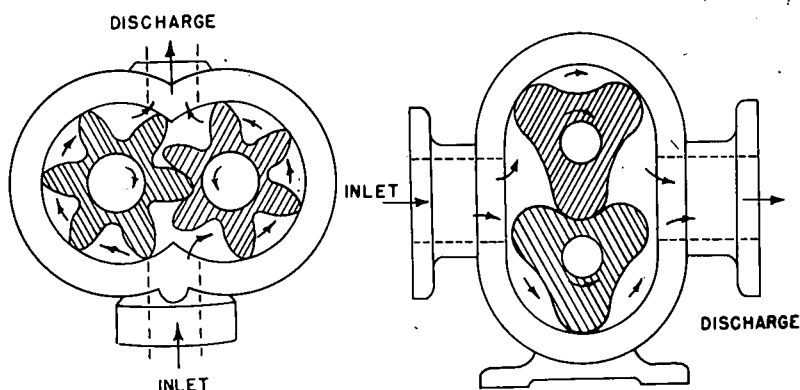


Figure 19—Rotary pumps.

Note:

The pump types illustrated in Part V include those which are frequently used for home water systems. There are other types and installations now available and future developments will no doubt provide additional selection.

PART VI

Pump Installation

Well Platforms

Construct well platforms from a 1:2:3 concrete mix. Make the platform six inches thick at the center and slope it one inch to the outside edges. Reinforce the platform with steel rods or heavy wire. For dug and bored wells the platform should extend at least one foot beyond the outside edge of the well casing and in no case should the platform be less than four feet square. (See Figure 8 and Figure 10.)

Hand Pump Connections

For dug and bored wells a four-inch pipe sleeve with reinforcing bars welded to it should be set in the concrete platform while it is being poured. (See Figure 8.) The pipe sleeve should extend six inches above the platform and have a flange attached to it. A flange with slotted holes may be used. The pump should have a one-piece column and base and an expand-

ing type gasket placed between the base and the flange before bolting together. For drilled and driven wells the flange is attached directly to the casing.

Alternate attachment for a hand pump with a removable split base (as shown in Figure 11), can be made by extending the casing 18 to 24 inches above the ground surface. The pump is installed with a split ring sanitary well seal and base.

Electric Pump Connections

Generally, there are two methods of electric pump-to-well connection: (1) the pump is offset from the well or (2) the pump sets directly over the well. In either instance the casing entrance is closed with a sanitary well seal as shown in Figure 20.

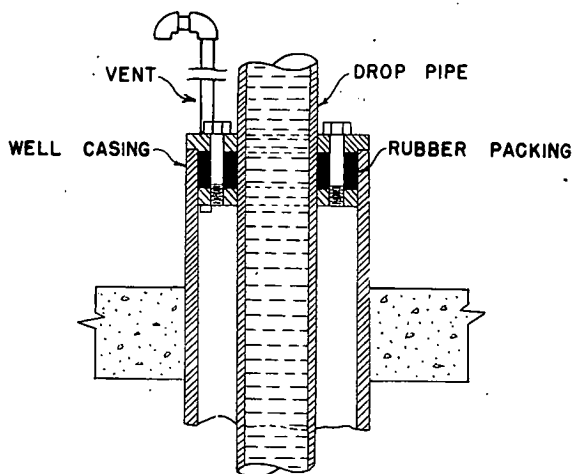


Figure 20—Split ring sanitary well seals are obtainable in all standard combinations.

Terminate vent pipe two feet above floor line with a screened reverse bend.

Housing the Pumping Unit

Basements

In some instances pumps that are offset from the well may be housed in the basement or some other warm, protected part of the house. However, do not place pumps in basements that are subject to flooding. Pumps installed in basements should be set on a concrete pedestal at least 18 inches above the floor line.

Pump Houses

Pumping units located at the well should be housed in an above-ground, insulated pump house. The pump house may be framed and sided with many types of building material. The size of the house can be varied according to the size of the pumping unit to be housed. The essential construction features are: (1) a door and removable roof opening, (2) three to four inches of insulation in the walls and roof and (3) supplementary heat controlled by a plug-in thermostat. Figure 22 shows construction details for one type of pump house.

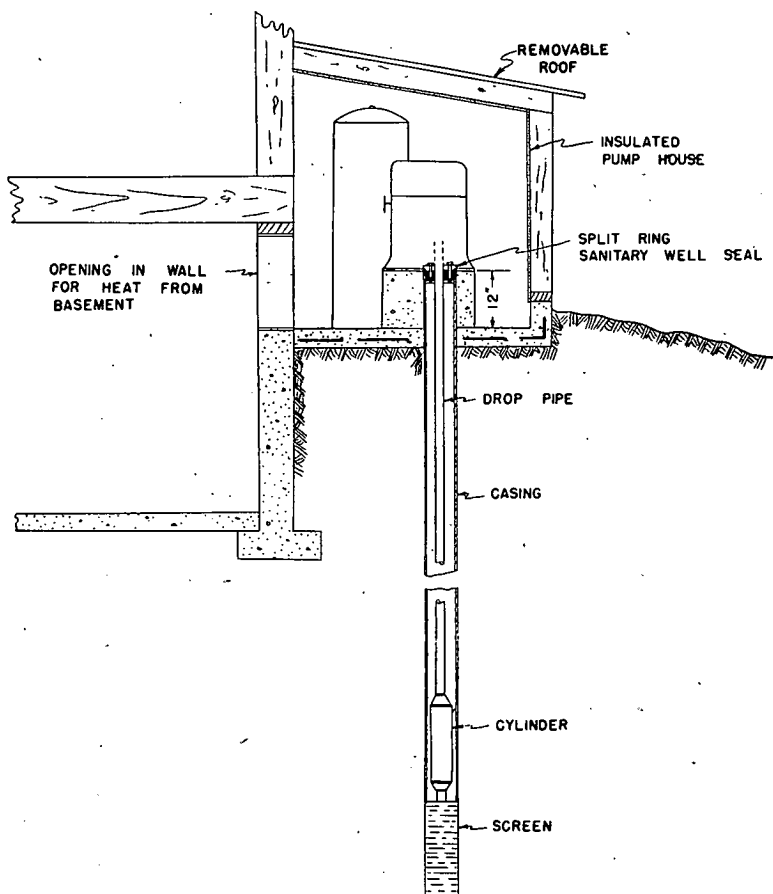


Figure 21—Insulated pump house attached to dwelling with opening in basement wall to supply some heat.

Pump Pits

Pump pits are not generally recommended for housing pumping units. In many instances it is not possible to drain the pit to the ground surface and accumulation of surface or waste water may contaminate the well. Moisture in the pit is also harmful to the pumping equipment.

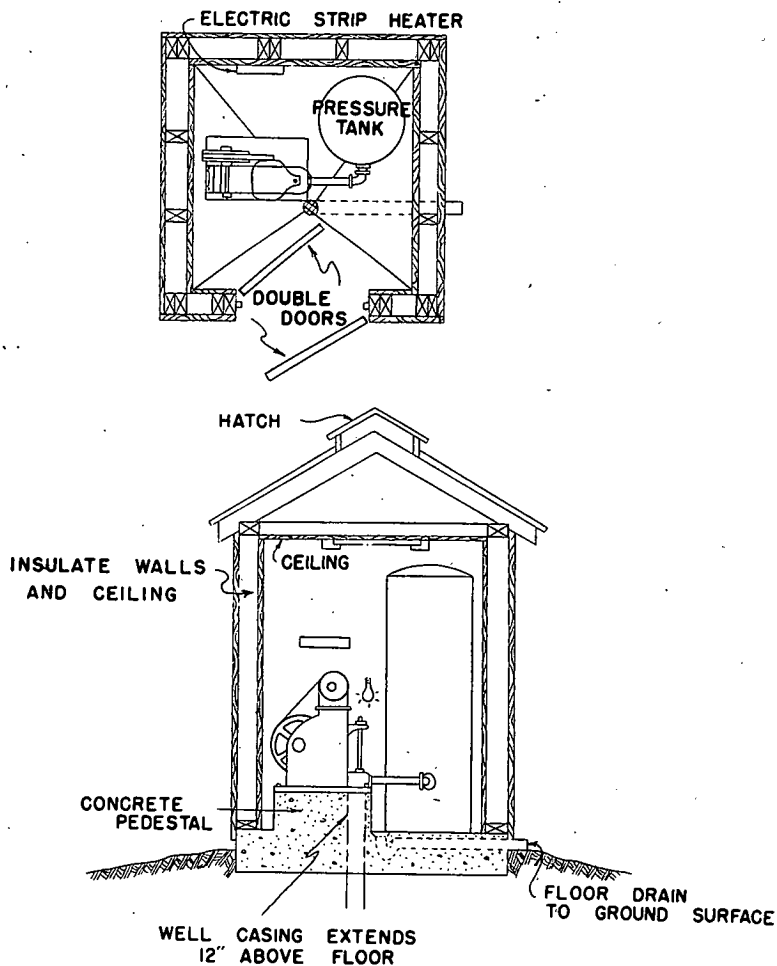


Figure 22—Insulated, Heated, Aboveground Pump House. An additional light bulb may be used for stand-by supplementary heat. Place a plug-in thermostat in line for automatic operation. A length of tile may be placed around the pump discharge pipe in floor. Fill tile with water-resistant insulating material.

Disinfection of Wells and Equipment

New Wells and New Equipment

New wells and equipment become contaminated in the process of construction and installation. This is unavoidable. In constructing the well, earth materials fall into the hole and the tools and casing become contaminated through handling. Pumps, distribution lines and fixtures also become contaminated through handling and by accumulating dust and other contaminants. Providing there are no location or construction defects in the system, this initial contamination of the new system can be eliminated by a thorough disinfection.

Existing Wells and Equipment

Whenever an existing water supply system is opened for repairs, such as installing new pump parts or adding or replacing distribution lines, air borne contamination and contamination by handling and other means is introduced into the system. After repairs are completed, the system should be thoroughly disinfected.

Do not disinfect wells which have **obvious construction or location defects** that may permit contaminants to enter. Such wells or water supply systems should be brought up to the sanitary standards in this bulletin before disinfecting.

Disinfection

The method of disinfection commonly practiced consists of introducing a chlorine solution into the well casing and circulating the solution in the system. Ordinary laundry bleaches, such as Clorox, Purex, Roman Cleanser and others, which have approximately 5 per cent available chlorine, are satisfactory for making the disinfecting solution.

The quantity of chlorine needed to disinfect a well is based on 50 parts of chlorine for a million parts of water. This is about the same as 1 ¼ pints of 5 per cent chlorine solution (laundry bleach) for each 100 feet of water in a 4-inch to 6-inch drilled well. For smaller casing sizes use about ¼ pint of laundry bleach for each 25 feet of water in the well.

The chlorine solution should be diluted with about 6 gallons of water. Pour the solution into the casing and not into the pump or drop pipe. In deep wells it may be necessary to pour the disinfecting solution through a length of garden hose which will reach to the bottom of the well. As the solution is poured, raise the hose progressively upward. This will distribute the disinfecting solution.

Dug and bored wells which have become contaminated should be pumped down as far as possible and cleaned. Then, allow the well to fill with water and disinfect. Use the following quantities of 5 per cent chlorine solution (laundry bleach) for each foot of water in the well. Cisterns may be disinfected at the same rate as dug or bored wells.

TABLE II
QUANTITY OF DISINFECTANT FOR DUG AND BORED
WELLS

Diameter of Well in Feet	Quantity of 5% Chlorine per foot of Water
1 to 3	$\frac{1}{2}$ pint
4	1 pint
5	1 $\frac{1}{2}$ pints
6	2 pints
8	3 $\frac{1}{2}$ pints
10	5 pints

After the well has been dosed with disinfecting solution, it should be pumped to waste until the chlorine odor is noticeable at all the faucets on a pressure system or at the spout on a hand pump. Then, do not pump for 12 to 24 hours. After this standing period, pump to waste through all the faucets and outlets until the chlorine odor is not noticeable.

Then, a sterile bottle should be obtained from, and a water sample submitted to, a private laboratory or the Indiana State Board of Health laboratory, 1330 West Michigan Street, Indianapolis, Indiana, for bacteriological analysis to determine if disinfection has been complete.

Water which has been bacteriologically tested and found unsafe for drinking and food preparation should not be used unless boiled for five minutes or treated with a 5 per cent available chlorine solution (laundry bleach) at the rate of three drops per gallon of water. If this latter treatment does not produce a strong taste of chlorine in the water, increase the quantity of chlorine until a strong taste is produced. The chlorine treated water should stand for 30 minutes before being used.

PART VII

Operation and Care of the Water Supply System

Quantity of Water Needed

The quantity of water needed will often influence the size and type of pump selected and the size of the distribution pipes. Farm and home water requirements usually include: (1) household use, (2) fire protection, (3) livestock use, (4) irrigation and sprinkling and (5) special processing uses, such as dairying or poultry dressing.

TABLE III
ESTIMATED WATER USAGE

General

	Gallons per day
Each member of family	50 to 100
Milk cow	20 to 35
Beef cow	8 to 15
Hog (per 100 pounds)	1 to 2
Sheep (each)	1 to 2
100 chickens	4 to 5
100 turkeys	7 to 10

Home Fixtures

	Gallons
Filling ordinary lavatory	1 1/2
Filling ordinary bath tub	30
Flushing water closet	4 to 6
Each shower bath	10 to 30

Lawn Fixtures

	Gallons per hour
1/2-inch garden hose with nozzle	200
3/4-inch garden hose with nozzle	300
Lawn sprinkler	120

Pressure Storage Tanks

Automatic water systems with pressure storage tanks are generally preferable to elevated storage tanks. A 42-gallon pressure tank is usually large enough for most farm installations. Locate the pressure tank close to the pump. The tank must be protected from freezing.

Elevated Storage Tanks

The storage tank for a gravity system should be large enough to hold at least two days' supply of water. This type of storage may be advantageously used with low yielding wells that will not supply peak water demands. The tank should be located above the highest outlet in the distribution system. The tank should have a tight cover and be constructed from durable corrosion-resistant material without cracks or openings which might permit entrance of contamination. It must be protected from freezing. A screened overflow should be provided.

Pipe Friction

Pipe surfaces resist water flow. This is called friction and increases the work of the pump. Too much pipe friction reduces the pressure and the quantity of water available at the faucets. The total pipe friction that must be overcome depends on: (1) length, size and kind of pipe, (2) rate of flow, (3) number of turns or bends in the pipe and (4) amount of corrosion or sediment in the pipes. The pipes should be large enough so that adequate pressure and quantity of flow can be maintained at all faucets or outlets.

Bacteriological Examination of Water

Bacteriological examination of water is a test for the presence or absence of **Coliform** bacteria. These bacteria are found in top soil and in the intestines of man and warm-blooded animals. The presence of these bacteria in the water sample indicates that the supply is contaminated. **Do not test** water from wells which have **obvious location or construction defects** that will permit the continued entrance of contaminants. Such wells should be repaired to meet the sanitary standards of this bulletin before the test is made.

Water samples for testing must be taken in a sterile bottle. When taking the sample, do not contaminate the mouth of the bottle by handling or unnecessary exposure. Send the sample immediately to the laboratory. Sterile bottles and bacteriological examination may be obtained from a private laboratory or the Indiana State Board of Health laboratory, 1330 W. Michigan St., Indianapolis, Indiana.

TABLE IV
FRICTION LOSS IN PIPES

Discharge in gallons per minute	Diameter of galvanized iron pipe in inches								Diameter of Type K copper tubing in inches				
	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3/8"	1/2"	3/4"	1"	1 1/4"
Friction loss in pounds per square inch for each one hundred feet length of straight pipe													
2	9.7	3.2	0.8						16.0	4.3	0.9	0.2	0.7
3	20.0	6.8	1.7	0.5					32.8	9.0	1.7	0.4	0.15
4	37.3	11.6	3.0	0.9	0.25	0.1			56.2	15.5	2.8	0.7	0.25
5	53.0	17.6	4.5	1.4	0.4	0.2					4.2	0.9	0.4
6			6.3	2.0	0.5	0.25	0.9				5.6	1.5	0.5
8			10.7	3.4	0.9	0.4	0.15	0.05			9.0	2.5	0.8
10			16.3	5.0	1.3	0.6	0.2	0.07			13.8	3.7	1.3
12				6.9	1.8	0.9	0.3	0.1					
14				9.5	2.5	1.1	0.4	0.15					
16				12.0	3.1	1.5	0.5	0.2					

An unsatisfactory test does not necessarily indicate that a new well is needed. If the water supply system has been opened for repairs or new equipment installed, contamination will be introduced into the system. This condition can usually be corrected by disinfection. Always retest the water after disinfection to make sure that it has been effective.

Water on which unsatisfactory bacteriological tests are reported should be boiled or batch-disinfected before being used for domestic purposes if there is no safe water available. If you get an unsatisfactory bacteriological report on your water supply and you are not able to correct the difficulties, see your local health department for advice.

Mechanical Chlorination

Water supplies which are likely to be contaminated, such as cisterns or springs or wells in fissured limestone formations can frequently be made safe for domestic use by proper continuous, mechanical chlorination. Mechanical chlorination is not a substitute for sanitary well location and construction. Continuous chlorination should be considered when safe water supplies are not available by any other means.

Disinfection by this method is accomplished by injecting measured doses of chlorine into the water supply line as the water is pumped. The dosage rate is determined by tests. The chlorine solution is made from a mixture of sodium or calcium hypochlorite and water.

Daily inspection and care and periodic maintenance is required where mechanical chlorinators are used. Mechanical chlorination is not a "cure-all" for every unsafe water supply. Consult your local health department, the Indiana State Board of Health or Purdue University before using a mechanical chlorinator.

Abandoned Wells

Wells which are no longer used should be filled with dense water-tight concrete or puddled clay. Every precaution should be taken to prevent surface water or other contaminants from reaching the water bearing formation. See your local health department if additional information is needed.

PART VIII

Springs

A spring used for domestic consumption should be enclosed by watertight walls and the cover made of concrete or other relatively watertight material. The protective housing should exclude surface drainage and other contaminants but permit entry of the spring water. There should be no openings whereby water can be obtained from the spring by dipping with cups or buckets. The cover should be movable or have a suitable manhole or service entry. Before attempting to enclose a spring, it should be excavated to locate the spring opening and to obtain a footing for the enclosing structure.

Springs should not be used for domestic purposes unless a series of bacteriological tests have indicated a safe supply. Even then, periodic examinations should be made. Where springs are located on slopes, diversion ditches should be constructed on the slope above the spring to divert surface drainage.

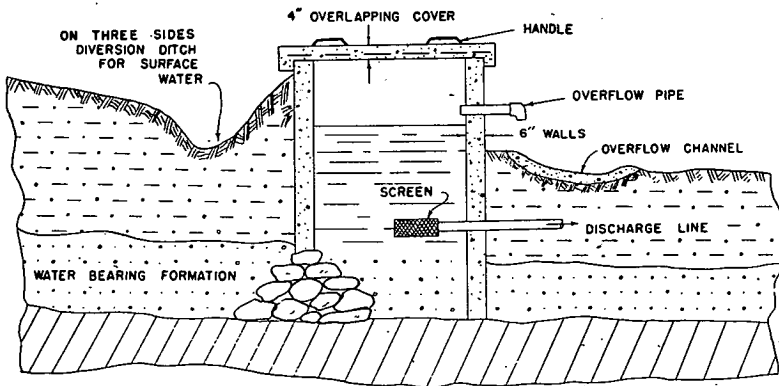


Figure 23—Protecting a spring.

PART IX

Cisterns

Do not use cistern water for domestic purposes if satisfactory ground water supplies are available. Constant care, cleaning and management are necessary for a satisfactory cistern supply. Leaves, dust, bird droppings and other contaminants on the roof necessitate by-passing the cistern with the first water flushed from the roof at each rain. Manual or automatic devices should be installed to by-pass this water.

Locate cisterns so that surface drainage is away from the cistern. This may require grading. Sewage disposal installations should be at least 50 feet from the cistern.

The size of the cistern will depend on the water requirements of the family, the roof area drained and the annual rainfall. Watertight construction is essential. The floor and walls should be poured from a 1:2:3 concrete mix, reinforced and coated inside with a 1:3 Portland cement mortar. Allow plenty of curing time. All inlet and outlet or waste pipes should be screened. Do not make any connections between the cistern system and another water supply system, sewage system or waste drain.

The Filter

Filter the roof water before it enters the cistern, but the filter cannot be depended upon for removal of bacterial contamination. To obtain best results with a cistern filter, it is especially necessary that a manual or automatic by-pass be used to prevent the first roof water of each rain from entering the filter. Disinfection is recommended for cistern water when used for drinking or food preparation.

The cistern filter must be regularly inspected and cleaned if it is to be of any value. A screen similar to those used on sink drains should be placed over the outlet pipe at the bottom of the filter. The filter should have 6 inches of coarse gravel in the bottom layer, 6 inches of fine gravel in the next layer and over this 18 inches of fine sand.

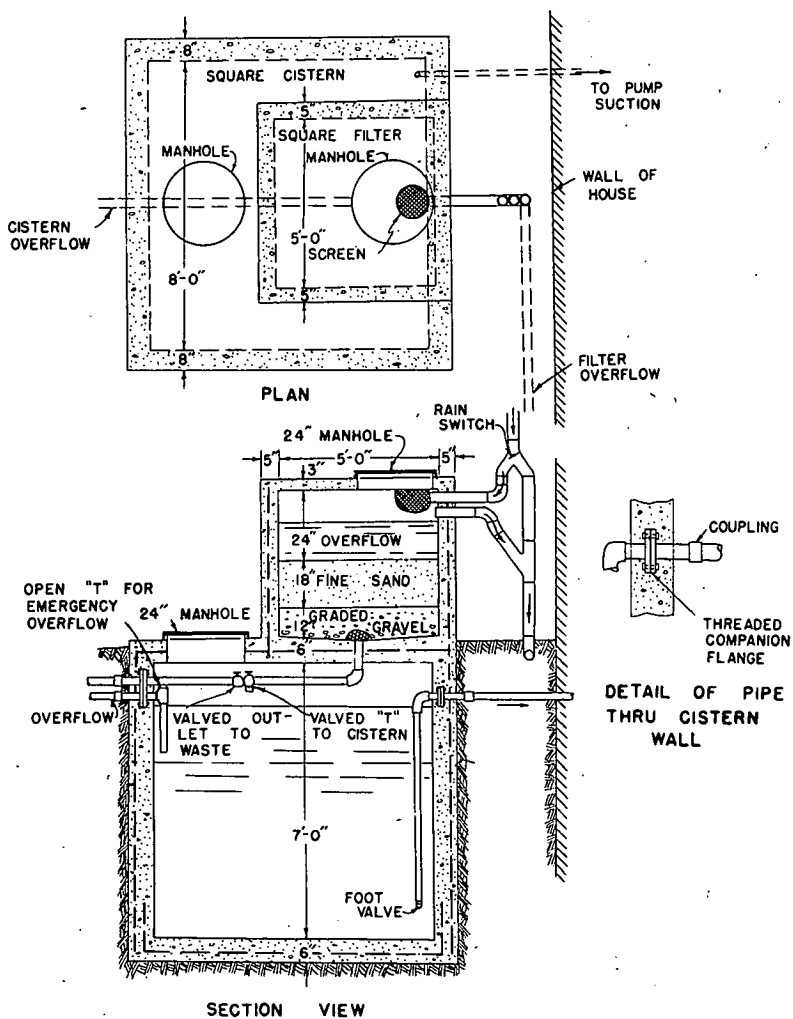


Figure 24—Cistern and filter. Entrance manholes have tight overlapping covers.